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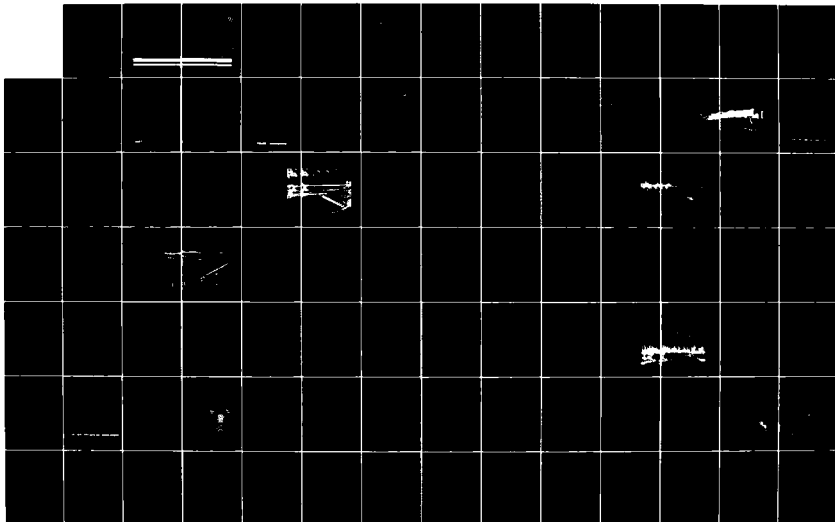
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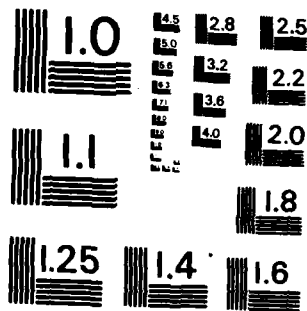
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MASTER PLAN FOR PUBLIC USE DEVELOPMENT AND RESOU

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UPPER MISSISSIPPI RIVER LAND USE ALLOCATION PLAN

MENT AND RESOURCE MANAGEMENT PART I & PART II

SEPTEMBER 1983



US Army Corps
of Engineers
St. Paul District

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St. Paul, Mn. 55101

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) LAND USE MISSISSIPPI RIVER RECREATION INLAND WATERWAYS WILDLIFE		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The primary objective of this master plan for the Upper Mississippi River, is to provide a clear, practical, and balanced plan that will guide future Federal land use decisions and public use development actions. The intent is to provide balanced distribution of the resources for wildlife production and management, to satisfy public recreational demands, and to insure continued river navigation. The plan was cooperatively prepared by the Corps and the U.S. Fish and Wildlife Service, Region 3.		

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ACKNOWLEDGEMENTS



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Federal Building, Fort Snelling
Twin Cities, Minnesota 55111



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
1135 U. S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101

Dear Reader:

We are proud to present to you the land use allocation plan for Federal land along the Mississippi River between Guttenberg, Iowa, and Minneapolis, Minnesota.

The primary objective of this plan is to balance and enhance public recreational use and fish and wildlife management while maintaining the river navigation system. We are confident that this land use allocation plan fully accomplishes this objective.

Much of the Federal land along the river is cooperatively managed by the Corps of Engineers and the U.S. Fish and Wildlife Service. Therefore, our agencies have worked together very closely in the preparation of this land use plan. The result is a solid land use framework upon which both agencies will prepare detailed development and management plans.

Implementation of this allocation plan and the associated development and management plans that will stem from it will significantly improve management of Federal lands. Because of the national significance of the Upper Mississippi River, such improved management is clearly in the best public interest.

Sincerely,

Harvey K. Nelson

Harvey K. Nelson
Regional Director, Region 3
U.S. Fish and Wildlife Service

Edward G. Rapp

Edward G. Rapp
Colonel, Corps of Engineers
District Engineer, St. Paul District

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ACKNOWLEDGEMENTS

This document was prepared by the Public Use Planning Section of the St. Paul District, Corps of Engineers, and is the result of a team effort involving the cooperation and close coordination of many disciplines and agencies. Special thanks go to those staff who actively participated from the following offices and/or agencies.

St. Paul District, Corps of Engineers

Public Use Planning Section
Natural Resources Management Section
Office of Counsel
Environmental Resources Branch
Reports and Communications Branch
La Crescent Field Office (Resource Management)

Region 3, U.S. Fish and Wildlife Service

Upper Mississippi National Wildlife and Fish
Refuge Office Headquarters
Area Office - Mississippi River
North Central Region Office

State Agencies

Wisconsin Department of Natural Resources
Minnesota Department of Natural Resources
Iowa Conservation Commission

Regional Advising Agency

Minnesota-Wisconsin Boundary Area Commission

Local Governmental Agencies

Sincere thanks also go to the many members of the general public who participated in the preparation of this document by attending the public workshops and meetings and by providing comments and other valuable contributions.

PREFACE, STUDY OBJECTIVES AND SCOPE

PREFACE

The St. Paul District, Corps of Engineers, developed the original Corps master plan for the Upper Mississippi River system over a decade ago. Since then, there have been many changes in public recreational perceptions and demands, in natural and man-made resources along the river, and in Federal roles in the project area (the Mississippi River from Minneapolis to Guttenberg, Iowa).

These changes have resulted in the need to update the original master plan and to make it a meaningful guide for future Federal management of the Upper Mississippi River. Towards that end, the St. Paul District has prepared this land use allocation plan as the first step in updating the master plan for the river. This plan has been prepared with significant cooperation and assistance from the Region 3 office of the U.S. Fish and Wildlife Service. Together, these Federal agencies manage approximately 130,000 acres of land along the Upper Mississippi River between Minneapolis, Minnesota, and Guttenberg, Iowa.

Because the Corps land use allocation plan (LUAP) has been cooperatively prepared and because it allocates both Corps and Fish and Wildlife Service lands, it has the combined support of both managing agencies. We believe that the land use allocations and related Corps and FWS joint policies in the LUAP provide a framework that will meet current and future public use demand for Federal lands while it maintains inherent resource quality for fish and wildlife management and enhancement.

The St. Paul District has prepared this master plan in separate parts. (This volume contains parts I and II, as described below.) This approach has allowed planning efforts to continue despite the St. Paul District's manpower limitations and funding fluctuations. This approach also allows implementation of parts as they are completed.

The master plan is divided into three major parts plus several separate supplements:

- Part I (project description, review, and analysis) presents relevant project and resource inventory data. This part provides information on base conditions needed for part II (land use allocation plan) and part III (plan of development).

- Part II (land use allocation plan) documents the preparation and coordination of the master plan, determining the best use of Federal lands, and also presents the policy of the many Federal agencies on private use of the public lands that they administer.

- Part III (plan of development) will focus on recommendations for future site-specific actions and on detailed recreation-oriented studies recommended by the GREAT I study. For example, it will present plans on how Blackhawk Park should be developed. Part III will be published later.

- An operational management plan (OMP) will be prepared in the near future. This portion of the master plan will be an appendix detailing the Corps of Engineers' natural resource management and park management (including shoreline management).

- A special publication called "Public Involvement in the Land Use Allocation Plan for the Upper Mississippi River" is being prepared. This document will be available in early 1980. It will provide details of the comprehensive public involvement program employed to develop the LUAP, including public comments and other contributions to the LUAP.

When complete, the master plan will be a coordinated plan for management and development of existing and potential Corps recreation resources, facilities, and activities in the project area.

STUDY OBJECTIVES AND SCOPE

The general objectives, scope, and format of the master plan follow the Corps-wide guidelines in the Engineering Regulations (see section 2.00 of the report for more details). Therefore, this master plan does not attempt to resolve many broad-based and long-term problems associated with the Upper Mississippi River. Examples of such problems include increased sedimentation, water quality issues, balancing of commercial navigation, recommended development that are not on Federal lands, optimization of land levels, and many others. Issues associated with



II (land use allocation plan) documents preparation and coordination for finding the best use of Federal lands. It presents the policy of the managing agencies on private use of the public land that they administer.

III (plan of development) will focus on recommendations for future site-specific and on detailed recreation-oriented studies recommended by the GREAT I study. As an example, it will present plans on how Hawk Park should be developed. Part III will be published later.

A rational management plan (OMP) will be developed in the near future. This portion of the master plan will be an appendix detailing Corps of Engineers natural resource management and park management (including river management).

A special publication called "Public Comment in the Land Use Allocation Plan for the Upper Mississippi River" is being prepared. The document will be available in early 1984. It will provide details of the comprehensive public involvement program employed to obtain comments and other contributions to the

plan. The master plan will be a fully developed plan for management and development of the river and potential Corps recreation-related facilities, and activities in the study

problems are, however, identified in this plan as needed. These problems may be addressed in separate future studies by the Corps and other appropriate agencies.

The primary objective of this master plan is to publish a clear, practical, and balanced plan that will guide future Federal land use decisions and public use development actions. The intent of the master plan is to provide balanced distribution of the Federal lands needed to preserve the natural riverine resources for wildlife production and management, to satisfy public recreational demands, and to insure continued river navigation.

New research and primary data collection were generally not required for the land use allocation plan because of the many recent, pertinent studies of the study area. These sources contain diverse and extensive inventory information upon which a land use allocation plan can be developed. Updating of previous study data critical to meaningful completion of the LUAP was necessary (e.g., updating real estate maps and refinement of the U.S. Geological Survey base maps).

However, new research and primary data collection are necessary for part III of the master plan. New work is especially needed for many of the GREAT I-related studies (e.g., recreation use monitoring and lock waiting area studies).

OBJECTIVES AND SCOPE

The objectives, scope, and format of this plan follow the Corps-wide guidelines in the Regulations (see section 2.00 of this plan for details). Therefore, this master plan attempts to resolve many broad-based and long-term issues associated with the Upper Mississippi River. Examples of such problems include increasing river flow, water quality issues, balancing growth and navigation, recommended developments on Federal lands, optimization of pool and lock operations, and many others. Issues associated with such

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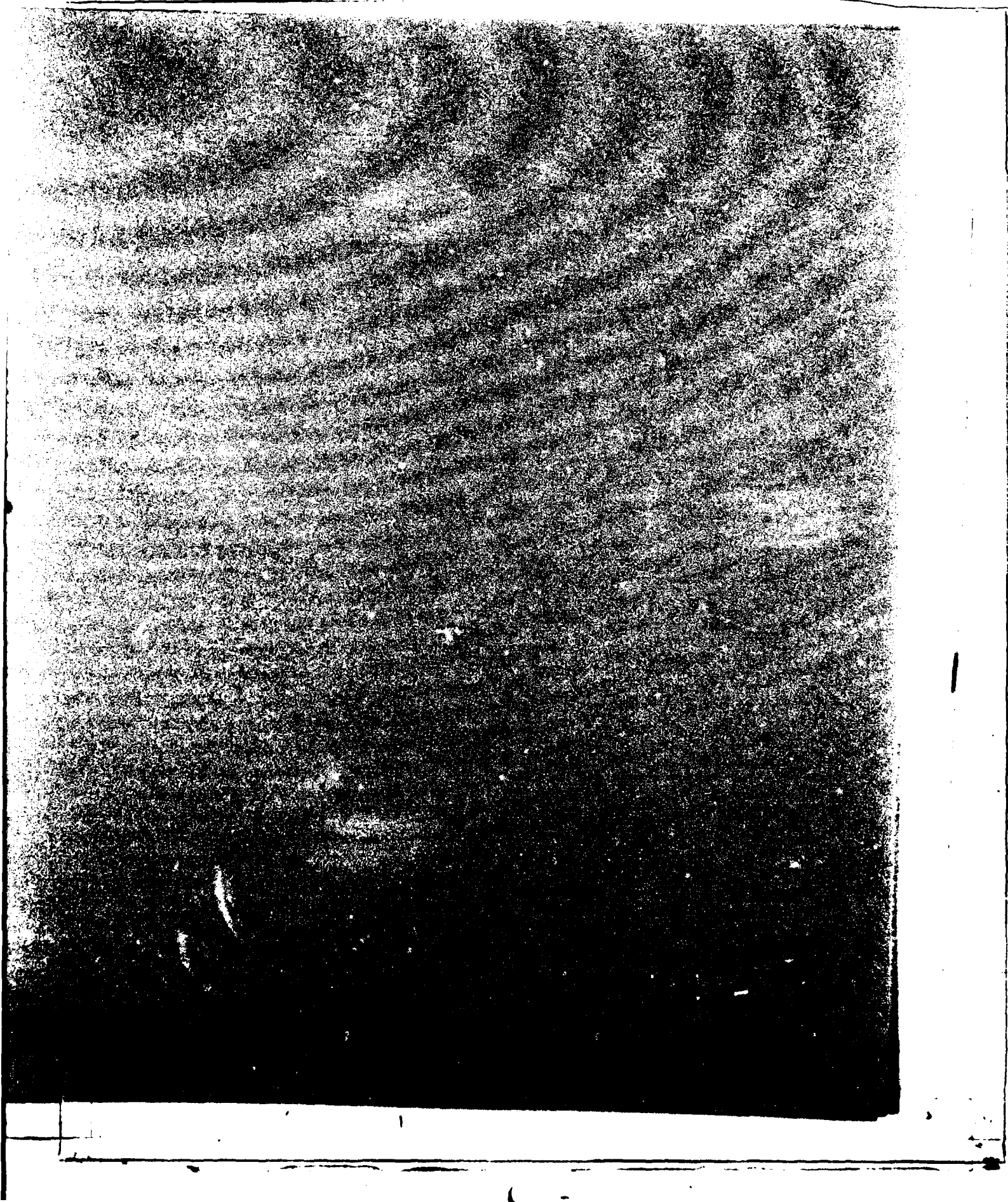
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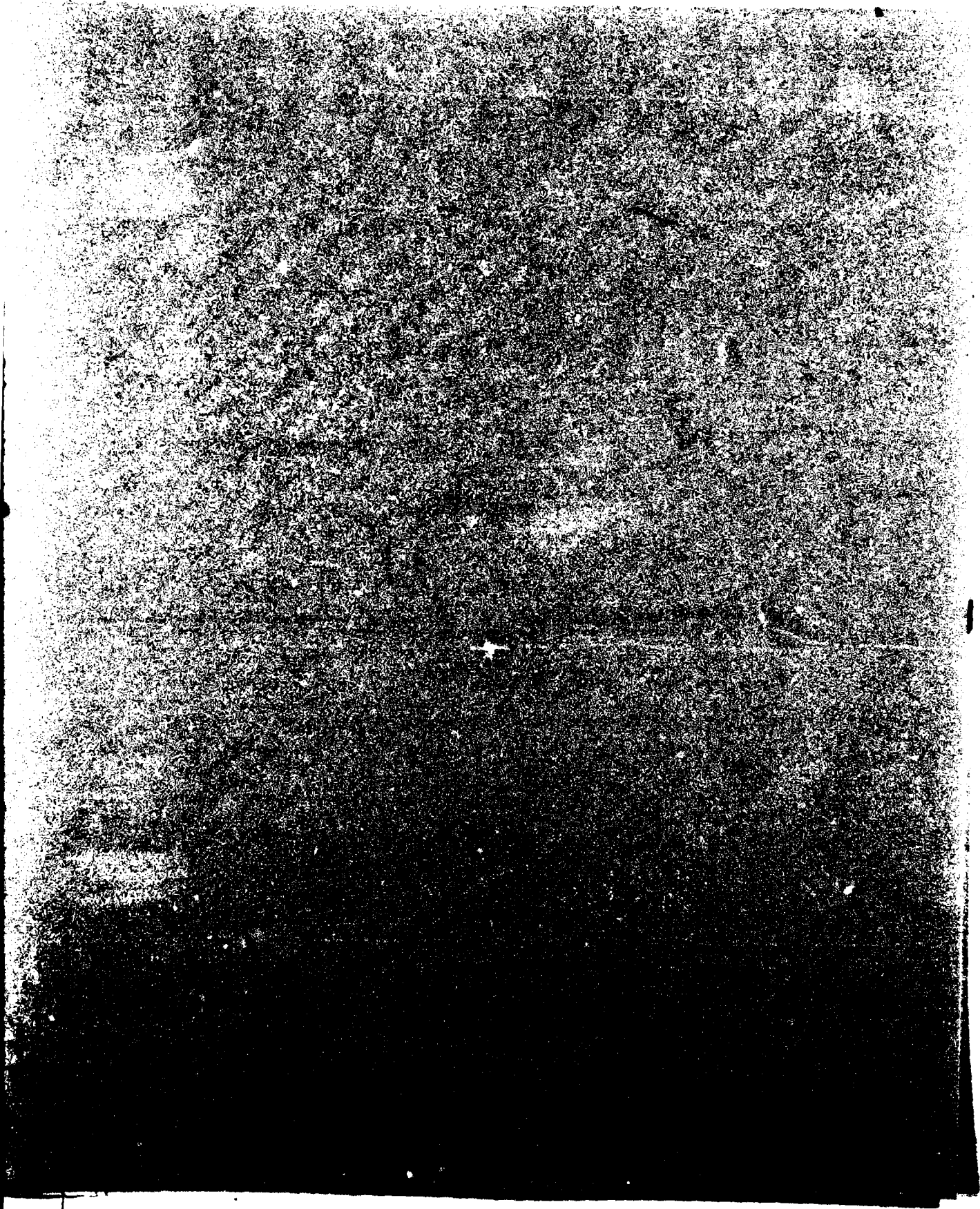
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1. PROJECT INFORMATION

GENERAL

1.01 The 9-foot navigation channel⁽¹⁾ within the St. Paul District, Corps of Engineers, is an existing operational project consisting of 13 locks and dams, supplemented by maintenance dredging, that facilitates navigation on the upper reaches of the Mississippi River system. In addition to the Upper Mississippi itself, this project includes portions of the Minnesota, St. Croix, and Black Rivers (see figure 1-1). Each lock and dam complex creates a flat water pool that is regulated to maintain water levels required to accommodate navigation. The St. Paul District also dredges within these pools, as necessary, to maintain the 9-foot deep navigation channel, as required by law.

1.02 Each pool area contains varied natural and recreation resources, often with high scenic, educational, scientific, wildlife, and cultural values. Protection and proper use of these resources are major concerns of the Corps of Engineers.

PROJECT LOCATION

Nine-Foot Channel Project

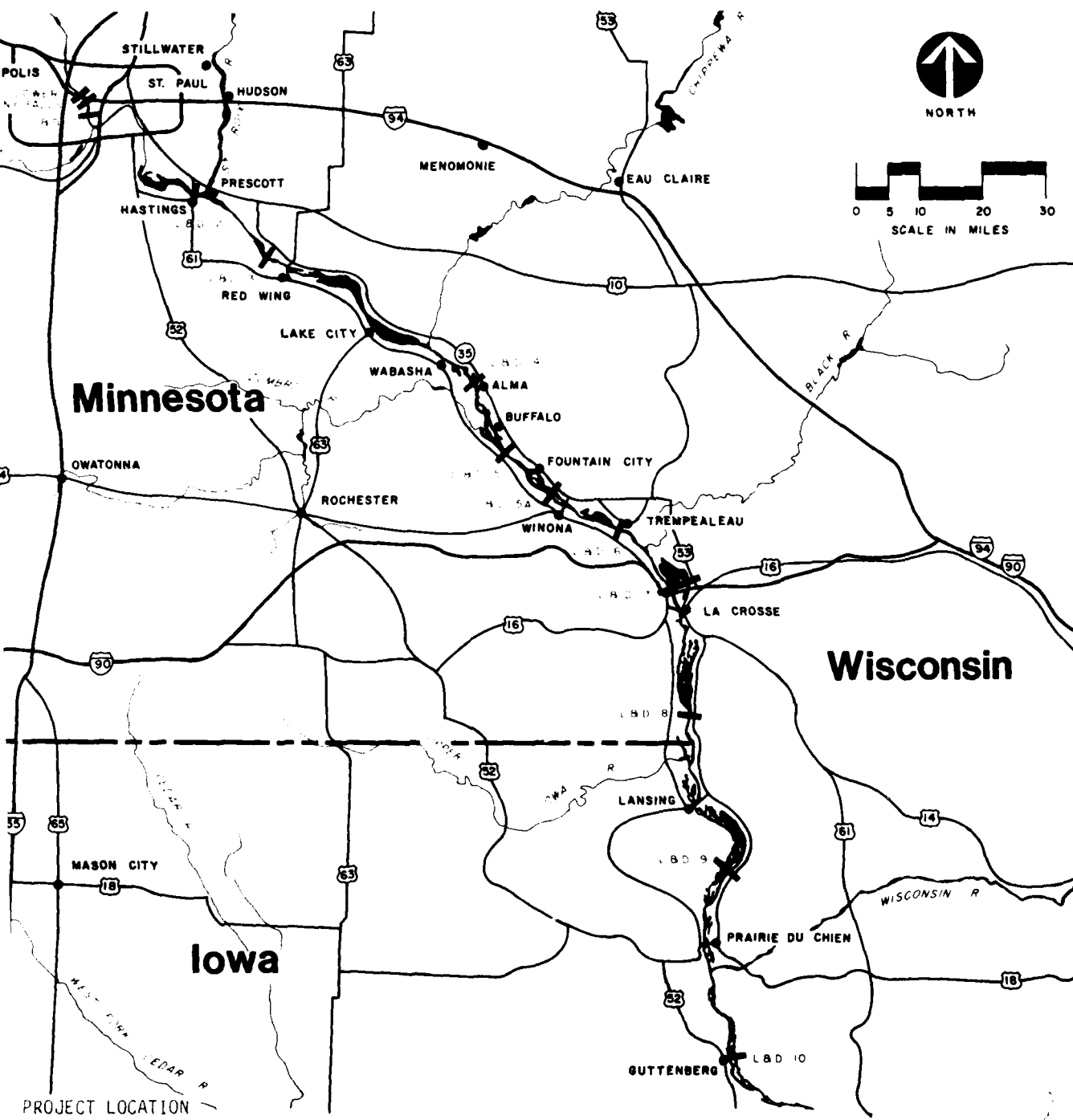
1.03 The St. Paul District maintains a 9-foot navigation channel in the Upper Mississippi River from the head of navigation at Minneapolis, Minnesota (river mile 857.6),⁽²⁾ to just below lock and dam 10 at Guttenberg, Iowa (mile 614.0), for a total distance of 243.6 river miles. The project also includes maintenance of a 9-foot channel on 14.7 miles of the Minnesota River, 24.5 miles of the St. Croix River, and 1.4 miles of the Black River. All 13 of the locks and dams (Upper St. Anthony Falls lock and dam through lock and dam 10), however, are on the Mississippi River proper.

(1) See the glossary for technical and other terms not in common use or used in a specific, limited sense in this report.

(2) All Upper Mississippi River miles cited in this report refer to miles above the mouth of the Ohio River. River miles for the Minnesota, St. Croix, and Black Rivers refer to the miles above the confluence of that particular river with the Mississippi. Thus, the confluence of the Minnesota and Mississippi is at mile 0 of the Minnesota but mile 844.0 of the Upper Mississippi.



FIGURE 1-1. PROJECT LOCATION



1. PROJECT INFORMATION

Master Plan Study Area

1.04 The portion of the Mississippi River covered in this plan begins above Minneapolis, Minnesota (mile 870.0), and ends just below Guttenberg, Iowa (mile 614.0). From mile 870.0, the river flows generally southeast to the mouth of the St. Croix (mile 811.3). From that point, the Mississippi continues southeast, forming the Minnesota-Wisconsin boundary between miles 811.3 and 673.8 and the Wisconsin-Iowa boundary between miles 673.8 and 614.0. The portion of the Minnesota River studied lies between mile 30 above the mouth of the Minnesota, near Shakopee, Minnesota, and the Minnesota's confluence with the Mississippi at mile 844.0 in pool 2. The section of the St. Croix River studied runs from mile 33.0 above the mouth of the St. Croix, about 10 miles above Stillwater, Minnesota, to the confluence with the Mississippi at mile 811.3, at Prescott, Wisconsin, in pool 3. The section of the Black River studied runs from mile 5 above the mouth of the Black, at Onalaska, Wisconsin, to its confluence with the Mississippi River at mile 698.2, at La Crosse, Wisconsin, in pool 8.

PROJECT AUTHORIZATION

1.05 As early as 1824, the Federal Government recognized navigational problems on the Mississippi River. At that time, Congress authorized the Corps of Engineers to remove snags, shoals, and sandbars; to excavate rock in several reaches of rapids; and to close meandering sloughs and backwaters to confine flows to the main channel and thus to assure more adequate depths for navigation during low-water periods.

1.06 The first comprehensive modification of the river for navigation was authorized by the River and Harbor Act of June 18, 1878: a 4-1/2-foot channel from the mouth of the Missouri River to St. Paul, Minnesota. The Corps maintained this channel by constructing dams at the Mississippi River headwaters (impounding water to supplement low flows), bank revetments, wing dams, closing dams, and longitudinal (riverbank) dikes. In 1890, the 4-1/2-foot channel was extended to Minneapolis, requiring removal of boulders and dredging of sandbars.

1.07 The River and Harbor Act of March 1892 authorized a 6-foot channel. The additional depth was obtained primarily by constructing more wing dams of rock and brush structures extending out from the river to constrict low-water flows). The shore opposite the wing dams was protected from erosion by rock riprap. Construction of lock 1 in 1917 and of lock and dam 2 in 1930 improved the 6-foot channel.

1.08 The River and Harbor Act of July 3, 1906, authorized a 9-foot channel navigation project on the Upper Mississippi. This act approved construction of a system of locks and dams plus supplemental structures between Minneapolis and the mouth of the Minnesota River. The 9-foot channel from pool 1 through pool 10 was operational in 1938. In 1937, the act authorized a 4.6-mile extension of the project upstream end in Minneapolis, past the Fall Anthony. The Lower St. Anthony Falls lock and dam complex was completed in 1959, and the Upper St. Anthony Falls lock and dam was completed in 1960.

PROJECT PURPOSES

1.09 The 9-foot channel project was originally constructed for a single purpose - to provide sufficient water depth for river traffic and to control flows in the river. However, in addition to its original navigation purpose, the project has provided the desirability of the Upper Mississippi River for a broad spectrum of outdoor recreation by providing stable water levels where formerly the water fluctuated substantially with every change in flow. Throughout the year, the locks and dams now provide series of slack-water pools that annually attract thousands of persons who fish, swim, boat, and picnic. The number of small pleasure craft on the river increases every summer, and each fall attracts thousands of hunters in the marshes. Wildlife also benefits from the project because the backwater areas created by the locks and dams provide good habitat for feeding, spawning, and nesting.

1.10 A common misconception is that the Mississippi River lock and dam system was constructed primarily to control floods, but their function for flood control is secondary.



Harbor Act of March 2, 1907, channel. The additional depth was constructing more wing dams (low curbs extending out from shore restrict low-water flows). Usually wing dams was protected against. Construction of locks and dam 1 and dam 2 in 1930 further channel.

Harbor Act of July 3, 1930, channel navigation project on the Mississippi River. This act approved construction of locks and dams plus supplemental dredging and the mouth of the Mississippi River from pool 1 through lock 1 in 1938. In 1937, Congress approved extension of the project at the St. Louis, past the Falls of St. Louis. St. Anthony Falls lock and dam was completed in 1959, and the Upper St. Louis dam was completed in 1963.

Channel project was originally single purpose - to provide high water for river traffic during low water. However, in addition to this purpose, the project has improved the Upper Mississippi River for a variety of recreation by providing more pools where formerly the river ran shallowly with every change in flow. The locks and dams now provide a series of pools that annually attract thousands of people who fish, swim, boat, hunt, or operate small pleasure craft on the water, and each fall finds more people. Wildlife also benefits from the backwater areas created by the project for feeding, spawning, and

ception is that the Mississippi River system was constructed to control flooding for flood control is very

limited. Figure 1-2 illustrates the pool stair-step effect that the dams created on the Upper Mississippi. Note that flooding still occurs (shown by the "High Water" line) even with the dams in place.

1.11 Before the Corps of Engineers constructed the 9-foot channel navigation project, the river would occasionally have so little water that navigation was nearly impossible, backwater areas would dry up, and mud flats would extend out from the riverbanks. This situation is represented in figure 1-2 by the line labeled "Low Water Before Lock Construction." Since the locks and dams were built, the water level has been relatively stable, as shown by the lines indicating "Low Water After Lock Construction."

1.12 Although navigation was the initial purpose of the 9-foot channel project, Congress has since authorized the development of recreational facilities and required the consideration of fish and wildlife conservation at water resources projects. The Flood Control Act of 1944, as amended, authorized the Corps of Engineers to construct recreational developments at water resources projects. In 1958, the Fish and Wildlife Coordination Act required that fish and wildlife conservation receive consideration equal to that of other project purposes and be coordinated with other features of water resource development. In accordance with these laws, development and management of project lands along the Upper Mississippi River are now major goals of the 9-foot channel project. The intent of the Corps is to encourage maximum sustained use and public enjoyment while protecting the available natural resources.

1.13 The creation of the lock and dam/river pool system also offers opportunities for the implementation of electric generating/hydropower projects at the dams. Studies to evaluate the feasibility of specific hydropower sites are underway by the Corps and the Federal Energy Regulatory Commission (FERC). Generally, the Corps will support development of such projects at its locks and dams on the Upper Mississippi River as long as the projects would not compromise the integrity of the navigation system or of the congressionally-mandated fish and wildlife and recreation purposes of the project.

1. PROJECT INFORMATION

PREVIOUS REPORTS

1.14 The reports listed below include pertinent studies by the Corps of Engineers and interagency studies to which the Corps made significant contributions. This list is selective, rather than comprehensive, because so many studies of the Mississippi River have been conducted. More information on the relationship of this report to other studies (of the Corps and other agencies) is found in part I, sections 2.192 to 2.204 and 3.120 to 3.211.

1.15 Although some of these documents are no longer available for public distribution because their supply is limited, they are available for inspection in the St. Paul District office and in many public and institutional libraries within the study area.

- Great River Environmental Action Team (GREAT) I. Study of the Upper Mississippi River: Guttenberg, Iowa to the Head of Navigation at Minneapolis, Minnesota. 9 Volumes. 1980.

- GREAT River Study, Recreation Work Group. Recreation Demand Analysis: Public Use Projections. Prepared for the Outdoor Recreation Work Group of the Great River Environmental Action Team by the St. Paul District, Corps of Engineers. 1976.

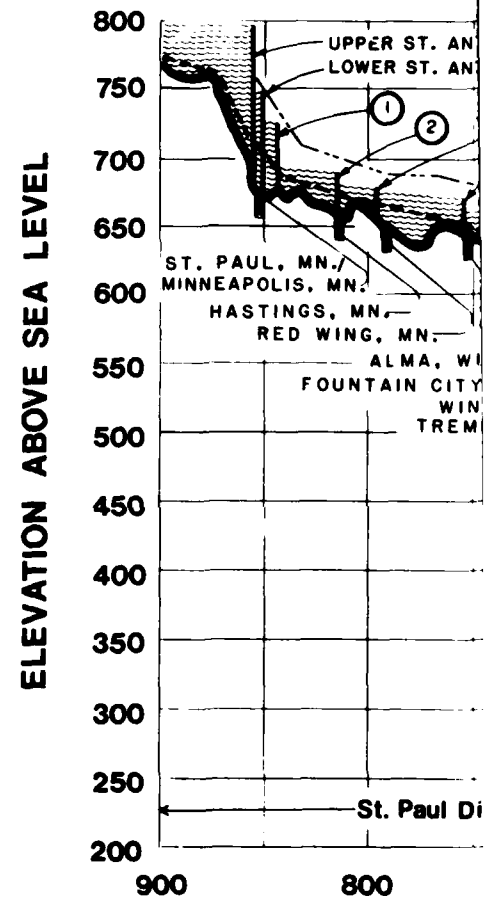
- North Star Research Institute. Final Report: Environmental Impact Assessment Study of the Northern Section of the Upper Mississippi River. Prepared under contract for the St. Paul District, Corps of Engineers. 14 Volumes. 1973.

- U.S. Army Corps of Engineers, St. Paul District. Final Environmental Impact Statement: Operation and Maintenance, 9-Foot Navigation Channel, Upper Mississippi River, Head of Navigation to Guttenberg, Iowa. 2 Volumes. 1974.

- U.S. Army Corps of Engineers, St. Paul District. Implementation for GREAT I Study: Nine Foot Channel Project, Upper Mississippi River (Head of Navigation to Guttenberg, Iowa). 1981.

- U.S. Army Corps of Engineers, St. Paul District. Master Recreation Plan. Mississippi River 9-Foot Channel Navigation Pools, St. Anthony Falls Pools and Pools 1-10. 1965-1973 (individual pool volumes - parts I-XII - are listed below:

"Stairway of Water"



APPROXIMATE

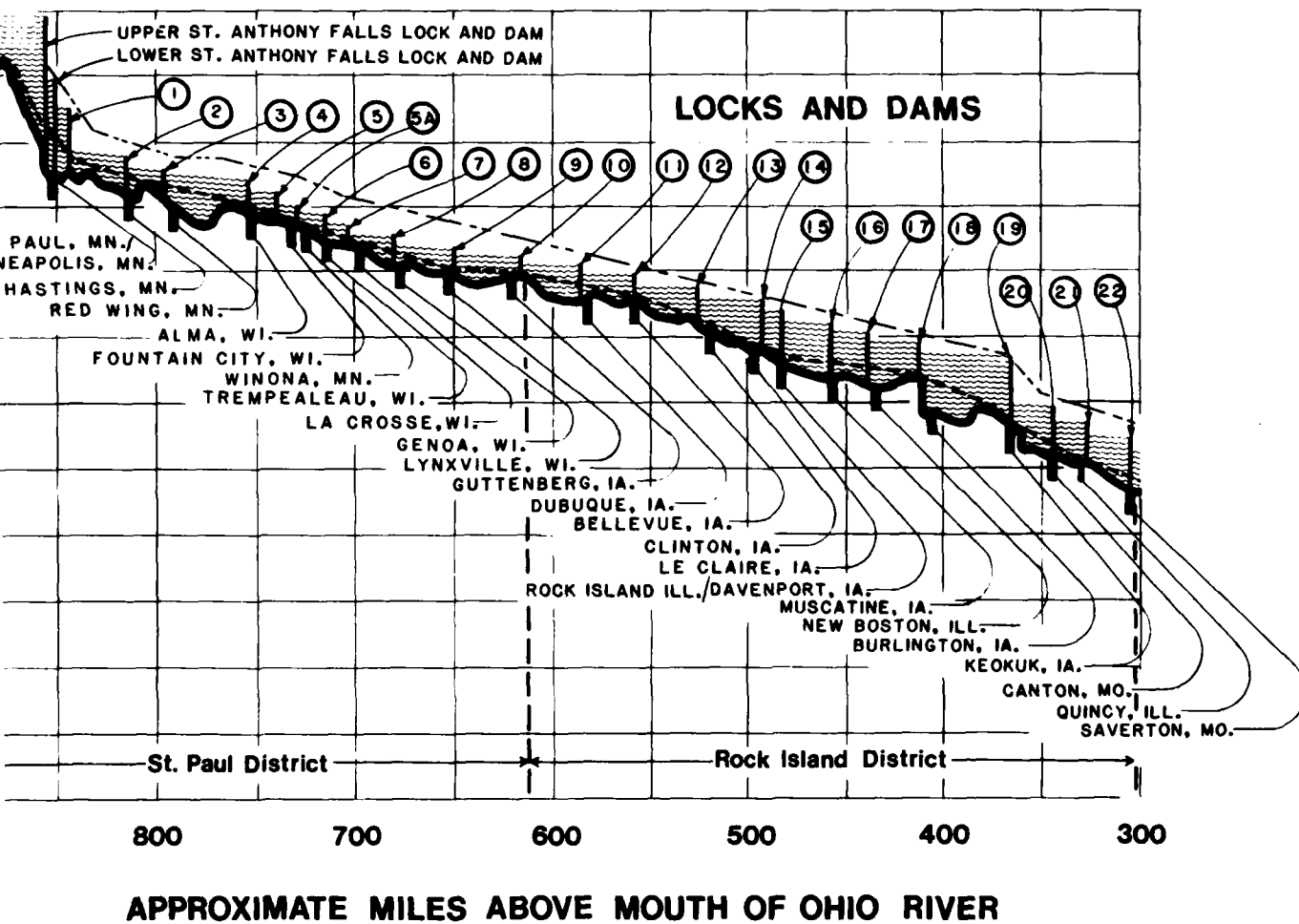
LEGEND

- HIGH WATER
- LOW WATER AFTER LOCK
- LOW WATER BEFORE LOCK
- APPROXIMATE RIVER BED

FIGURE 1-2. THE LOCKS AND DAMS PROJECT FOR A VARIETY OF RECREATION



airway of Water"



- H WATER
- N WATER AFTER LOCK CONSTRUCTION
- N WATER BEFORE LOCK CONSTRUCTION
- ROXIMATE RIVER BED

THE LOCKS AND DAMS PROVIDE A SERIES OF SLACK-WATER POOLS THAT ANNUALLY ATTRACT THOUSANDS OF PEOPLE FOR A VARIETY OF RECREATION ACTIVITIES.

1. PROJECT INFORMATION

Part I - General Information. 1965.

Part II - St. Anthony Falls Pools and Pool 1. 1972.

Part III - Pool 2. 1973.

Part IV - Pool 3. 1967.

Part V - Pool 4. 1968.

Part VI - Pool 5. 1968.

Part VII - Pool 5A. 1969.

Part VIII - Pool 6. 1969.

Part IX - Pool 7. 1965.

Part X - Pool 8. 1967.

Part XI - Pool 9. 1968.

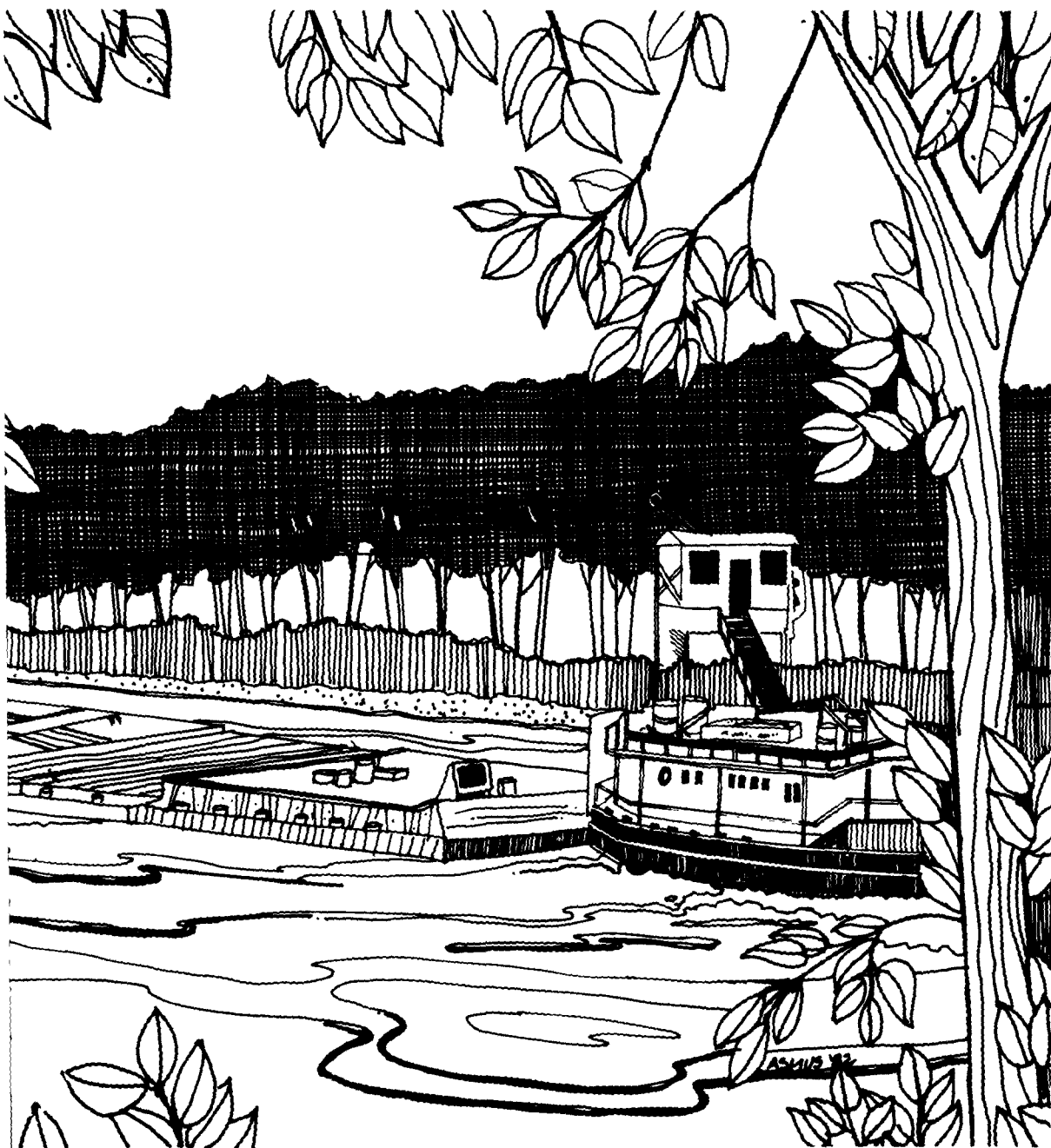
Part XII - Pool 10. 1968.

● U.S. Army Corps of Engineers, St. Paul District. Reconnaissance Report for Hydropower: Upper and Lower St. Anthony Falls, Locks and Dams 1, 2, 5, 7, and 8. 1981.

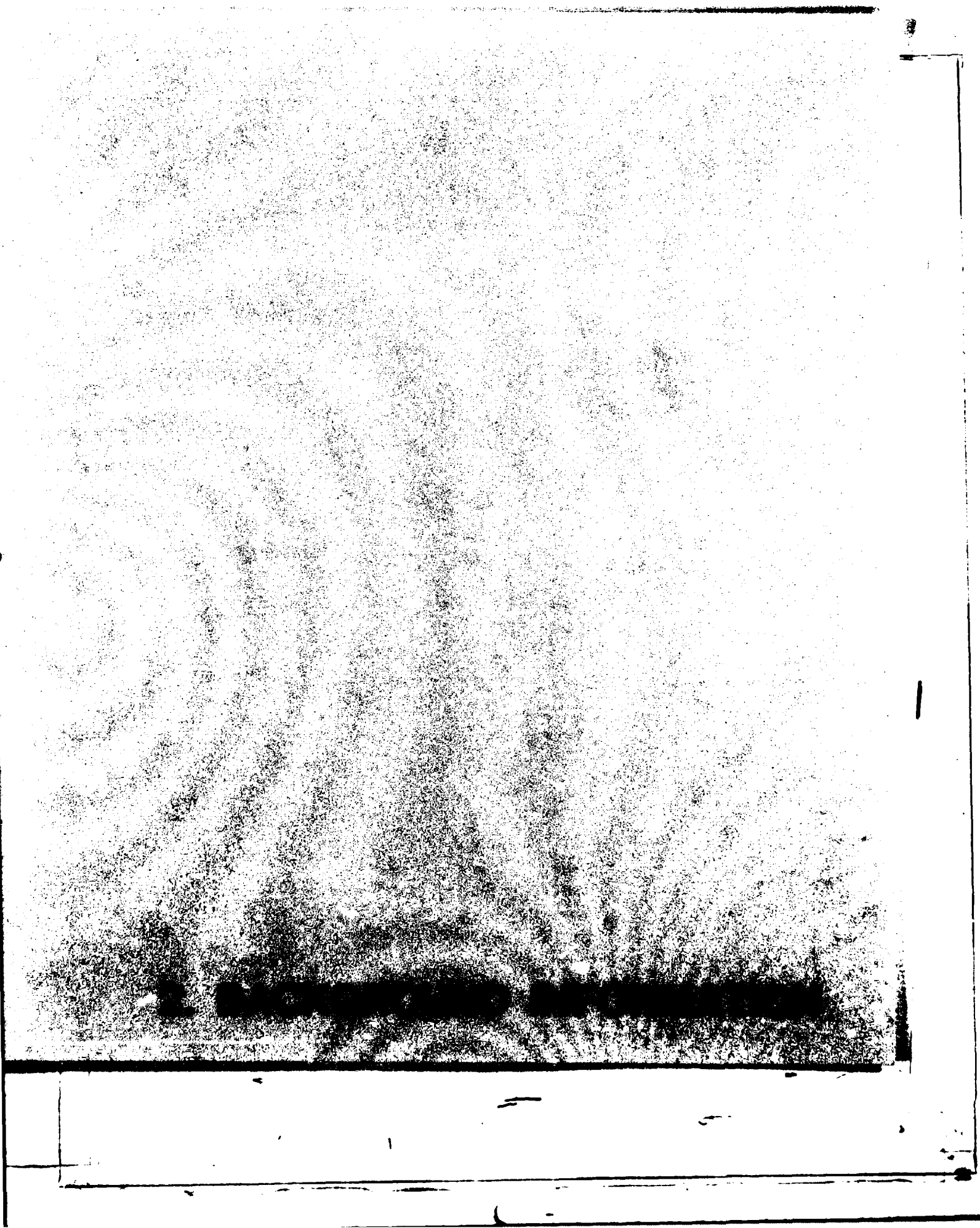
● U.S. Army Corps of Engineers, St. Paul, Rock Island, and St. Louis Districts. Recreational Craft Locks Study, Stage II Planning Report, Upper Mississippi River Basin: Minnesota, Wisconsin, Iowa, Illinois, Missouri. 1977.



FIGURE 1-3. A vital link in our national transportation porting bulk commodities for over 150 years. Early way to modern barges and giant tows as advancing technology



For national transportation system, the Upper Mississippi river navigation project has provided an efficient means of transport over 150 years. Early types of water craft were crude but efficient. Canoes, keelboats, and paddlewheelers gave way as advancing technology created more sophisticated and larger vessels.



2. BACKGROUND INFORMATION

OVERVIEW OF PROJECT AREA

2.01 The Mississippi River headwaters are in northcentral Minnesota, a relatively flat area where streams meander through shallow valleys. This part of the Mississippi is too shallow for commercial navigation. But where the Mississippi reaches Minneapolis in central Minnesota, it flows in a narrow valley with steep bluffs on either side. Corps of Engineers locks and dams in this valley allow river traffic to reach this area. Minneapolis, then, is the head of navigation on the Mississippi. This area marks the beginning of the master plan project area.

2.02 The gradient of the riverbed where the Mississippi flows into Minneapolis is the steepest of the entire river. Consequently, the locks in this area have the greatest lifts (difference in water level between upstream and downstream sides of the lock) of all the locks in the Mississippi River navigation system. In fact, the three uppermost locks (Upper and Lower St. Anthony Falls and lock and dam 1) have a greater combined lift than the combined lift of the 10 remaining downstream locks in the St. Paul District.

2.03 The Minneapolis-St. Paul metropolitan area is the most highly urbanized area on the Upper Mississippi River. This metropolitan area has a considerable impact on all facets of the river system. Access to the river is often difficult because of the bluffs and because much of the river's edge is industrialized and privately owned. As a result of the extensive development, the quality of the water is generally below the water quality of the river as a whole. Water quality further deteriorates in this area below the Mississippi's confluence with the Minnesota River - a river that carries a large sediment and nutrient load from the farmlands to the west.

2.04 The Minnesota River enters the Mississippi between Minneapolis and St. Paul. Thirty-three miles downstream from the mouth of the Minnesota River, the St. Croix River joins the Mississippi in pool 3. Unlike the Minnesota River, the St. Croix is a relatively clean river that drains Minnesota and Wisconsin from the north. Consequently, the water quality of the Mississippi improves below the mouth of the St. Croix.

2.05 The Minnesota and St. Croix Rivers are important to the Mississippi River navigation system because they are tributaries that the Corps maintains (in

part) for commercial river traffic. There are no Federal lands along the river. In fact, there are very few Federal lands. Lock and dam 2 (near Hastings), Minnesota, area does not figure significantly in Federal land use as described.

2.06 Downstream of St. Paul, the river widens into a wide floodplain, developing a series of lakes and sloughs. The Mississippi widens until it reaches Lake Pepin, a natural river-lake approximately 25 miles long. This lake ends at the delta of the River (a contributor of large volumes of sediment visible for many miles downstream).

2.07 Below the Chippewa River, the river forms a main channel with a series of extensive backwaters. The climate in the River Valley downstream from Minneapolis is because the floodplain is only a few feet above sea level and because it is flat. The rise is as high as 650 feet above sea level. Winters are severe in the River Valley. Minnesota, for example, Rochester, Minnesota, area only at the west.

2.08 Further downstream, in pool 7, the river contains many ponds and lakes such as the waters of the Black River flow into the portion of Lake Onalaska passes through the spillway. This water enters the Mississippi downstream near La Crosse, Wisconsin.

2.09 From pool 7 to the southern end of the St. Paul District at Guttenberg, Iowa, the river flows through a valley 2 to 3 miles wide with bluffs, crags, and pinnacles. The narrow and sometimes discontinuous bases of the bluffs where these terraces are places for people to settle and farm.

2.10 Below Prairie du Chien, Wisconsin, the River flows into the Mississippi River at lock and dam 10. Lock and dam 10, Iowa, marks the end of the St. Paul District of the Upper Mississippi River.

2.11 In each of the 13 pools in the river, distinct zones occur. The upper zone is essentially the normal river



commercial river traffic. However, there are Federal lands along these tributaries. In the area there are very few Federal lands upstream from Dam 2 (near Hastings). Consequently, this does not figure significantly in the allocation of land use as described in this study.

Upstream of St. Paul, the Mississippi spreads over the floodplain, developing an extensive system of pools and sloughs. The Mississippi continues to flow until it reaches Lake Pepin, a 22-mile-long lake over-lake approximately 2 miles wide, in pool 4. The lake ends at the delta formed by the Chippewa, a major tributary of large volumes of coarse sediment (for many miles downstream of its mouth).

Below the Chippewa River, the Mississippi again flows in the main channel with a wide floodplain of backwaters. The climate of the Mississippi valley downstream from pool 4 is moderated because the floodplain is only about 550 feet above the valley floor and because it is flanked by bluffs that rise as high as 650 feet above the valley floor. The river is less severe in the river community of Minnesota, for example, than they are in the State of Minnesota, area only about 45 miles to the west.

Further downstream, in pool 7, the floodplain is broken up by many ponds and lakes such as Lake Onalaska. The Black River flows into Lake Onalaska. A tributary of Lake Onalaska passes through Onalaska Dam. This water enters the Mississippi River near La Crosse, Wisconsin.

From pool 7 to the southernmost boundary of the study area at Guttenberg, Iowa, the river flows in the valley 2 to 3 miles wide between weathered bluffs, terraces, and pinnacles. Terraces, usually sometimes discontinuous, can be seen at the base of the bluffs where these terraces have provided a place for people to settle and for towns to develop.

At Prairie du Chien, Wisconsin, the Wisconsin River flows into the Mississippi River, 16 miles above Dam 10. Lock and dam 10, at Guttenberg, is the end of the St. Paul District portion of the Mississippi River.

Of the 13 pools in the study area, three types occur. The upper end of each pool is usually the normal river condition, where

impoundment did not raise the water levels to any extent. In this portion of the pools, marsh development is limited, and the old condition of deep sloughs and wooded islands is found. In the middle of each pool, impoundment backed up water over islands and old hay meadows, spreading the river out over large areas of comparatively shallow water. The best marsh development occurred in the middle portion of the pools. Immediately above each dam, the water was impounded to a depth that precluded marsh development. At present, these areas are essentially deep, open water.

2.12 These lake-type pools caused a change from predominantly fast-water species such as smallmouth bass to fishes whose environment is pond-like, such as the largemouth bass, bluegills, crappies, carp, buffalo, and northern pike. The dams also slowed the current and increased silt deposition. The sediment sometimes covers the sand and gravel bars necessary for the feeding and breeding of such fish as smallmouth bass and walleyes. There has been a corresponding increase of fish that are tolerant of mud bottoms.

2.13 Since many of the characteristic birds of the river valley are migratory, the study area is of national and international significance. In addition, the Mississippi River and its tributary valleys are a natural route over which the non-migratory or semi-migratory species may expand their ranges. The river valley forms a wildlife corridor between the Gulf of Mexico and the Great Lakes Region. The mammalian species are generally representative of eastern (Alleghenian) types, with some influence of southern (Carolinian) and northern (Canadian) species.

2.14 Plant species in the river valley also enjoy conditions that are not generally associated with the geographic location of the river. Overlapping of eastern and western species and subspecies of plants as well as animals occurs in the river valley. Several high "sand prairie" areas are also scattered along the length of the Upper Mississippi National Wildlife and Fish Refuge, offering habitat conditions normally found much farther west. In the pioneer sites (disturbed sites without previous growth where species of plants are beginning to grow) along sandbars, mud flats, and other open places of recent soil disturbances, the usual forest is dominated by black willow and cottonwood. On open sites near the upland edge of the wet ground, river birch and swamp

2. BACKGROUND INFORMATION

oak are the usual dominants. As both of these woodland types mature, these areas are invaded by silver maple and American elm.

SUMMARY POOL DESCRIPTIONS

2.15 The following paragraphs briefly describe each pool within the study area.

St. Anthony Falls Pools and Pool 1

TABLE 2-1 - PRINCIPAL FEATURES OF ST. ANTHONY FALLS (SAF) POOLS AND POOL 1

St. Anthony Falls	Upper	Lower
Length of pool	10.9 river miles	.4 miles
River mile limits	853.8-864.7	853.4-853.8
Average pool elevation	798.3 feet(1)	750.0 feet
Pool surface area	974 acres	51 acres
Shoreline miles (meandering outer perimeter)	25.0 miles	1.5 miles
Land owned by Corps (Upper and Lower SAF combined)	13 acres: 10 acres above normal flat pool	

Pool 1

Length of pool	5.7 river miles
River mile limits	847.7-853.4
Average pool elevation	725.1 feet
Pool surface area	546 acres
Shoreline miles	11.6 miles
Corps-owned land	33 acres: 6 acres above normal flat pool

(1) Pool elevations are given in feet above mean sea level.

2.16 **Description** - The Upper and Lower St. Anthony Falls locks and dams at river miles 853.8 and 853.4, respectively, are in the main channel at Minneapolis. Both locks are along the west (right descending) riverbank. The falls consist of a hard layer of limestone over a bed of soft sandstone. In prehistoric times, the falls were near the Minnesota

River, about 8 miles downstream from site. As the protective limestone lapsed through the years, the falls gradually

2.17 Locks and dam 1 is at river mile 853.4 (the Twin Cities of St. Paul and Minneapolis locks are along the Minneapolis side descending bank). Pool 1 is confined to the channel cutting through limestone bluffs. These bluffs rise almost vertically to heights approaching 150 feet. They are covered with deciduous trees and rock outcroppings. At the Washington Avenue bridge, the bluffs decrease in height.

2.18 **Recreation Facilities** - The three pools have the following recreational facilities: 3 launching lanes and 125 spaces, 97 picnic units, 5 miles of hiking trails, 5 miles of bicycling trails. Major recreation areas are North Mississippi River Regional Park, Anthony Park (mile 857.5), Mississippi River Regional Park (mile 853.5), East River Flats (mile 853.5), and portions of Minnehaha Park (miles 853.5-853.8). Developable land adjacent to these pools is mainly for industrial and commercial use and is characterized by bluffs.

2.19 Intermittent water pollution, heavy traffic, the narrow channel, the steep banks between the locks, plus the lack of recreational facilities discourage many recreational activities. General lands here are limited and are unsuitable for based public recreation because of the topography and lack of flat beach area along the river.

2.20 **Transportation, Accessibility, and Uses** - Much industry is located along the river from upper pool 1 to the upstream limit of the navigation channel (mile 857.6). Eight navigation facilities for shipment and storage of commodities are located in the three pools: the St. Anthony Falls pools and nine locks. The St. Anthony Falls pools are the origin point for a substantial amount of the grain and lumber shipped from the St. Paul District. State, county, and city roads closely parallel the river on both sides of the pools. Many roads enter the pool area. Twelve highway bridges cross the river between dam 1 and the upper limits of the 9-foot channel.



es downstream from their present effective limestone layer broke off the falls gradually receded.

1 is at river mile 847.7, between St. Paul and Minneapolis. The two e Minneapolis side (west or right Pool 1 is confined to a narrow through limestone and sandstone ufts rise almost vertically to 150 feet. They are covered with d rock outcroppings. Upstream of enue bridge, the bluffs begin to

ilities - The three pools combined recreational facilities: 2 boat nching lanes and 125 nearby parking hits, 5 miles of hiking trails, and ing trails. Major parks include iver Regional Park (mile 858), St. e 857.5), Mississippi River Park t River Flats (mile 852.5), and ahaha Park (miles 847 and 848). d adjacent to these pools is zoned al and commercial use. Other areas y bluffs.

water pollution, heavy commercial ow channel, the short distance , plus the lack of access and ge many recreational boaters who e the river. Generally, riverbank ited and are unsuitable for land- reation because of the steep ck of flat beach areas near the

n, Accessibility, and Commercial try is located along the banks o the upstream limit of the 9-foot (mile 857.6). Eighteen commercial es for shipment and/or receipt of ated in the three pools: nine in lls pools and nine in pool 1. The pools are the origin or terminal ial amount of the goods shipped in t. State, county, and local roads e river on both sides of all three enter the pool area laterally, and cross the river between locks and e limits of the 9-foot navigation

2.21 Along the Upper St. Anthony Falls pool and south of I-694, the Great River Road is Marshall Street. The river's edge here is wooded, with occasional clearings that provide views of the river. The Great River Road then passes south through a mixed industrial and residential area where the view of the river is obstructed until the Broadway Bridge crossing. Expansive views to downtown Minneapolis are visible from the bridge. The Great River Road alignment parallels the river along West River Road North, with land adjacent to the river being park-like. Below Plymouth Avenue, the Great River Road passes through a warehouse district with many loading docks. Along First Street North, the road is partially surfaced with cobblestones. Crossing Third Avenue, the new alignment of West River Road will closely parallel the river. At Fourth Street South, the Great River Road alignment follows the existing West River Parkway. This corridor has been retained as parkland and is one of the more scenic portions of the metro segment of the Great River Road. As the Great River Road approaches Minnehaha Park, locks and dam 1 becomes visible. Minnehaha Park offers extensive day-use park facilities and river views and trails. The river valley widens as the road nears the confluence of the Mississippi and Minnesota Rivers.

2.22 Access, however, is generally limited by steep bluffs along the river. Most of the land is privately owned or industrialized, although the cities of St. Paul and Minneapolis own tracts of land along the river below the University of Minnesota.

2.23 **Cultural Areas** - Cultural resources within these three pool areas are primarily limited to historic resources. These resources are structures such as buildings and bridges. Few known prehistoric archeological sites remain within the Twin Cities metropolitan area. Many cultural resources along the bluffs have probably been impacted or destroyed by commercial, residential, and industrial development. Most known historic sites that have survived are on top of the bluffs, well removed from the effects of water levees or of human activities in and along the river.

2.24 In these three pools, many of the properties on the National Register of Historic Places are associated with the early industrial developments along the river. The Cappelen Memorial Bridge, the Pillsbury "A" Mill, the St. Anthony Falls Historic District, and the Minnehaha State Park Historic District are on the National Register of Historic

2. BACKGROUND INFORMATION

Places. The Minnesota Historical Society also owns several noteworthy structures in this area: the Edwin H. Hewitt House (mile 851), the Bennet/McBride House (mile 854), and the Grain Belt Brewery (miles 854-858).

2.25 Natural Resources - Lack of shallow water habitat, the relatively small size of the pools, industrial development along the riverbanks, and periods of poor water quality also limit fish and wildlife populations. Some good habitat for small furbearers and birds still exists on the bluffs along pool 1. Hunting of game is prohibited. In the St. Anthony Falls area, soils along the riverbanks are generally sands. On top of the bluffs, soils are generally classified as sandy clays. These soils are characteristically well drained on hills but have a high water table in lower areas. The percolation rate is generally less than 10 minutes per inch. These soils tend to be acid and low in nitrate and potassium. The bedrock in the area is a layer of limestone over sandstone. Vegetation consists of mixed prairie types associated with deciduous and coniferous forests.

Pool 2 (Including the Minnesota River)

TABLE 2-2 - PRINCIPAL FEATURES OF POOL 2

Length of pool	Mississippi River	32.5 river miles
	Minnesota River	25.0 river miles
River mile limits	Mississippi River	815.2-847.7
	Minnesota River	0.0- 25.0
Average pool elevation		687.2 feet
Pool surface area	9,652 acres	
	(Mississippi River segment)	
Shoreline miles (meandering outer perimeter)	110 miles	
	(Mississippi River segment)	
Corps-owned land	1,219 acres:	
	255 acres above normal flat pool	

2.27 Description - Lock and dam 2 is at river mile 815.2 near Hastings. Pool 2 is entirely in Minnesota.



FIGURE 2-1. The need to carry larger projects. Federal efforts to improve was authorized. Uncontrolled free-f environment provides hundreds of the



The need to carry larger cargos in and out of the region prompted the Federal Government to become more actively involved in navigation. Federal efforts to improve the river for navigation began in 1824. In the late 1920's and early 1930's, the present 9-foot navigation channel was created. Uncontrolled free-flowing rivers gave way to locks and dams that created slack-water pools and controlled channels. The resulting system provides hundreds of thousands of acres of fish and wildlife habitat plus a multitude of recreational opportunities.

2. BACKGROUND INFORMATION

From below locks and dam 1 to St. Paul Park (mile 829), extensive residential, institutional, and commercial developments occupy the tops of the bluffs and the floodplain. Downstream to lock and dam 2, only occasional residential or industrial sites occur.

2.28 Land use in the Fort Snelling area is best characterized as urban/natural. Near the St. Paul central business district it can be described as urban/industrial. The viewing angle at both sites is from above. River awareness at Fort Snelling is high, but in the St. Paul central business district, awareness of the river is low. Pool 2 includes the 25 navigable river miles of the Minnesota River, but the Corps maintains only the lower 14.7 miles for the 9-foot navigation channel.

2.29 Upstream from lock and dam 2, pool 2 spreads over the floodplain, and the deeper navigable channel meanders through the valley. Near mile 825, the pool becomes confined to the old river channel. Except for several backwater areas and connected lakes, the pool remains within the confined and progressively narrowing channel up to lock and dam 1.

2.30 Extensive residential, institutional, and commercial developments occupy the blufftop and floodplain from locks and dam 1 to St. Paul Park, Minnesota (RM 829). Urban development below locks and dam 1 to Lilydale, Minnesota, is partially screened by vegetation and high bluffs. Downstream from St. Paul Park, only occasional residential or industrial sites interrupt the floodplain and bluff-slope woodlands.

2.31 Recreation Facilities - In pool 2, development of camping, swimming, and waterskiing has been hampered by water pollution, lack of access and facilities, heavy commercial river traffic, and bank development. Pool 2 (excluding the Minnesota River) has 11 boat accesses with a total of 14 launching lanes and 970 adjacent parking spaces. It also has 497 marina slips, 40 rental boats, and 392 picnicking units. The navigable section of the Minnesota River has 2 accesses, 2 launching lanes, 125 adjacent parking spaces, 60 camping units, and 300 picnicking units, plus 23 miles of hiking and 3.5 miles of cross-country ski trails. The pool has 6 dredged material disposal islands used as undeveloped recreation areas. Most of the open-water recreational boating occurs in the extreme upper portion and the lower portion of pool 2. However, because of the poor water quality in

this pool, water-contact sports should be at Hidden Falls/Crosby Farm Regional Park, St. Louis County Park, and Fort Snelling State Park and 2.

2.32 Transportation, Accessibility, and Uses - There are 29 commercial navigation facilities for the shipment and/or receipt of goods on the Minnesota River has another 9. Both the Mississippi River segment are paralleled by State, and county highways. Many highways enter the pool area laterally, particularly in the Twin Cities metropolitan area. Access is difficult because of the abundance of privately-owned lands and the lack of publicly-owned lands adjacent to the river. A paved highway parallels the right bank of the Minnesota River, and several main trunk roads approach the pool from the Twin Cities area.

2.33 In this pool, the Great River Road crosses the Mendota Bridge, offering views of the confluence of the Mississippi and Minnesota Rivers. Near Highway 13, the road follows the gently curving bluffs to Lilydale, and it crosses the river on the 35 bridge onto Shepard Road, going toward downtown St. Paul. Shepard Road characterizes the river and the qualities of St. Paul. Industry - with its storage areas of grain, coal, and oil - is located along much of this part of the road. Barns here present a strong image of river activity. A spur at Chestnut Street diverges from the Great River Road up through St. Paul's famous Hill district to its terminus at the State Capitol Building. The road begins again on Warner Road, linking with Highway 61, near Indian Mounds Park and leaving the river moving as the road moves to the south. It maintains a parkway character with occasional views of the river. The Great River Road crosses the Mississippi again at the I-494 bridge. It continues with Highways 52/56 and 55 and goes on to Hastings. The character along this route goes from residential/commercial on an industrial to rural agricultural setting near Hastings. On the river on Highway 10, the road proceeds to Douglas where both the St. Croix and Mississippi Rivers are visible. This point is also where the Great River Road enters Wisconsin from Minnesota.

2.34 Cultural Areas - Within pool 2, 49 cultural sites have been reported. Seven of these are



sports should be avoided. The
m Regional Park, Spring Lake
elling State Park are in pool

Accessibility, and Commercial

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d several main trunk highways
he Twin Cities area.

Great River Road crosses the
ng views of the confluence of
nnesota Rivers. Exiting on
llows the gently curving river
it crosses the river at the I-
oad, going toward downtown St.
cterizes the river-oriented
ndustry - with its associated
coal, and oil - is evident
of the road. Barge traffic
image of river activity. A
diverges the Great River Road
mous Hill district with its
apitol Building. The river
er Road, linking with Highway
Park and leaving St. Paul
s to the south. Highway 61
cter with occasional views of
River Road crosses the
I-494 bridge. It connects
55 and goes on to Hastings.
this route goes from
on an industrial fringe to a
ng near Hastings. Crossing
the road proceeds to Point
t. Croix and Mississippi are
also where the Great River
n Minnesota.

Within pool 2, 49 historic
Seven of these properties

are on the National Register of Historic Places. Most
are associated with the early industrial developments
along the river. Fort Snelling, at the confluence of
the Minnesota and Mississippi Rivers, provides an
outstanding example of the early military presence in
the area. This fort has been restored by the
Minnesota Historical Society and is open to the
public.

2.35 Across the river from Fort Snelling is the widely
known Sibley House and Museum, in the town of Mendota,
Minnesota. Near the intersection of Warner Road and
Highway 61 is Indian Mounds Park. As the name
implies, this is an ancient burial place of Indians
who inhabited this area before white settlers moved
in. Below this park, now obscured from view, is the
mysterious Carver's Cave. Eyewitness accounts in the
late nineteenth century tell of fantastic Indian
heiroglyphs in a mammoth cave with an underground
lake. Unfortunately, railroad construction has hidden
entry to the cave.

2.36 Over 30 archeological sites are within pool 2,
primarily outside the metropolitan area. One site,
the Schilling Site, occupied between 1000 BC and AD
1700, is on the National Register of Historic Places.

2.37 A cultural resources study completed for the U.S.
Fish and Wildlife Service from the mouth of the Minne-
sota River to Carver, Minnesota, recorded 107
prehistoric and historic sites.

2.38 **Natural Resources** - Fish habitat is limited yet
generally good upstream of downtown St. Paul. Fish
habitat is poor in the Minnesota River and in the
downstream portion of pool 2, however, because of
periodically poor water quality. Fishing is good in
the tail waters of locks and dam 1 and at the outfall
of Black Dog Lake (which Northern States Power Company
uses as a cooling pool for a generating plant).
Wildlife habitat is good in the areas of Crosby Lake,
Pig's Eye Lake, and Grey Cloud Island, and on the
Minnesota River in the Minnesota Valley Wildlife
Refuge and at Black Dog Lake. Pig's Eye Lake is in
pool 2, just downstream from St. Paul. This lake has
a unique heron-egret rookery at its border. This
rookery contains many black-crowned and great blue
herons and common egrets. Hunting is prohibited in
the majority of the pool 2 and Minnesota River study
area.

2. BACKGROUND INFORMATION

Pool 3 (Including the St. Croix River)

TABLE 2-3 - PRINCIPAL FEATURES OF POOL 3

Length of pool	Mississippi River	18.3 river miles
	St. Croix River	24.5 river miles
River mile limits	Mississippi River	796.9-815.2
	St. Croix River	0.0- 24.5
Average pool elevation		675.0 feet
Pool surface area		17,950 acres
Shoreline miles		37.1 miles
(meandering outer perimeter)	(Mississippi River segment)	
Corps-owned land	5,605	acres:
	2,400	acres above normal flat pool
	4,123	acres managed for fish and wildlife by State of Minnesota

2.39 Description - Lock and dam 3 is located at river mile 796.9 on the Minnesota side of the main channel. The lower 24.5 miles of the St. Croix River are also included in this pool. Within the St. Croix River Valley, the pool is confined within the original banks of Lake St. Croix, with very little lowland or floodplain area. In the Mississippi River Valley below the mouth of Lake St. Croix, the pool widens and spreads over low, flat bottom lands in a generally wide floodplain. Pool 3 is one of the least stable pools in the St. Paul District because it is subject to the effects of increased discharges from the Mississippi, Minnesota, and St. Croix Rivers, which all have large drainage areas.

2.40 The coliform bacterial count in this segment of the river remains relatively high. The Minnesota Board of Public Health still classifies the pool 3 stretch as an area where "whole body contact constitutes a distinct health hazard." The water quality of the St. Croix is better than that of either the Mississippi or the Minnesota Rivers. The

Minnesota is especially bad, with turnpike Island 10 times greater than Mississippi above the confluence. Effluent from the Minneapolis/St. Paul Sanitary District wastewater treatment plant is also a problem.

2.41 Recreation Facilities - Excluding pool 3 has 8 boat accesses with launching lanes and 129 parking spaces. These accesses are in Minnesota. There are 669 marina slips, 525 in Minnesota units; and no camping units. Pool 3 has material disposal islands used for recreation areas. The Corps maintains an area at Sturgeon Lake. Most open-water boating takes place near the mouth of the St. Croix, near Hastings and Diamond Bluffs, the third-highest level of boat use in the study area. The only major park in the Lake Rebecca Municipal Park (completed 1982). This stretch of the Mississippi River, is not suitable for contact sports because of poor water quality. A portion of the St. Croix in the 9-mile project has been designated a National Wild and Scenic River.

2.42 Transportation, Accessibility, Uses - Only one commercial navigation on the Mississippi River portion of the project. Two are on the navigable portion of the river. Pool 3 is neither the origin nor the destination for large amounts of river cargo. Most cargo passes through this section of the river. In other pools. Although good highway access to the river by water is lacking. In the Mississippi River Valley, the trunk or secondary feeder highways on either side of the pool. The only crossing the Mississippi is in Hastings, Minnesota, and Prescott, Wisconsin. The bridge crosses the St. Croix before its confluence with the Mississippi. Several bridges cross the St. Croix upstream.

2.43 Cultural Areas - Seventy-four historic sites are known in pool 3. All but two are in Minnesota, with the majority of the historic properties and two historic districts listed in the National Register of Historic Places. Most of the single property homes such as the Ignatius Eckert and the Dakota County Courthouse.



especially bad, with turbidity levels at 10 times greater than those of the above the confluence. Effluent from the St. Paul Sanitary District Pig's Eye treatment plant is also a problem.

Navigation Facilities - Excluding the St. Croix, 8 boat accesses with a total of 10 lanes and 129 parking spaces. Seven of these are in Minnesota. The pool also has slips, 525 in Minnesota; 36 picnicking and camping units. Pool 3 has 11 dredged disposal islands used as undeveloped areas. The Corps maintains a public access on Sturgeon Lake. Most open-water recreational activities take place near the mouth of the St. Croix at Hastings and Diamond Bluff. Pool 3 has the highest level of boat use among the pools in the area. The only major park in the area is a Municipal Park (completed in summer 1985) on a stretch of the Mississippi, with the exception of the St. Croix, is not suitable for water sports because of poor water quality. The section of the St. Croix in the 9-foot navigation channel has been designated a National Wild and Scenic

Portation, Accessibility, and Commercial - The only commercial navigation facility is in the Mississippi River portion of this pool and only the navigable portion of the St. Croix. Pool 3 is neither the origin nor destination for shipments of river cargo. Most tows simply pass through this section of the river en route to other areas. Although good highways lead into the pool, access to the river by well-paved roads is limited. In the Mississippi River segment, no main or secondary feeder highways closely parallel the pool. The only highway bridge crossing the Mississippi is in Hastings, although a bridge crosses the St. Croix between Hastings, Minnesota, and Prescott, Wisconsin (at that river's confluence with the Mississippi). Several other bridges cross the St. Croix upstream.

Historic Areas - Seventy-four historic structures are in Pool 3. All but two structures are in Minnesota, with the majority of these in Hastings. Properties and two historic districts are on the National Register of Historic Places, all in Minnesota. Most of the single properties are historic, including the Ignatius Eckert and the Bryon Hower homes, the Dakota County Courthouse and the

Hastings Foundry are also listed. The two historic districts are the East Second and West Second Commercial Districts in downtown Hastings.

2.44 Sixteen prehistoric sites are located on the Minnesota shoreline of pool 3, and 14 sites are on the Wisconsin side. Only one archeological site, the Bartron Site in Goodhue County, Minnesota, is on the National Register of Historic Places.

2.45 No comprehensive study has been conducted along the Lower St. Croix to determine the number of known sites. National Register sites along the St. Croix River are historic sites in Hudson, Wisconsin, and in Stillwater and Marine-on-the-St. Croix, Minnesota.

2.46 Pool 3 has a small but important commercial fishery in North and Sturgeon Lakes. Sport fishing is also good through much of the pool although it is not as popular as in other areas because of occasionally poor water quality. Hunting is a popular sport, and native game birds and locally nesting waterfowl are in good supply. Gores Wildlife Area, which is managed by the Minnesota DNR, is made up of several thousand acres, much of it designated as a wildlife sanctuary.

2.47 Two privately-owned natural areas in Pierce County of county-wide significance include Diamond Bluff Cottonwoods and Pierce County Islands.

Pool 4

TABLE 2-4 - PRINCIPAL FEATURES OF POOL 4

Length of pool	44.2 river miles
River mile limits	752.7 - 796.9
Average pool elevation	667.0 feet
Pool surface area	35,198 acres
Shoreline miles (meandering outer perimeter)	155 miles
Corps-owned land	2,900 acres: 390 acres above normal flat pool 2,811 acres managed by FWS

2.48 Description - Lock and dam 4 is at river mile 752.5 near Alma, Wisconsin. Pool 4 is the longest pool, with the longest shoreline and largest water

2. BACKGROUND INFORMATION

area of all the pools in the study area. Extending upstream from lock and dam 4, the main channel meanders through the floodplain towards the right side of the valley, until it reaches high ground at Wabasha, Minnesota. It then essentially parallels the high-ground area to the lower end of Lake Pepin. The Chippewa River is the only major tributary. Smaller tributaries include the Vermillion and Cannon Rivers in Minnesota and the Buffalo River in Wisconsin. Lake Pepin forms about half of the 44-mile-long pool.

2.49 Recreation Facilities - There are 35 boat accesses with a total of 4 launching lanes (32 in Minnesota, 16 in Wisconsin) and 1,530 parking spaces. Pool 4 also has 1,332 marina slips (1,210 in Minnesota, 122 in Wisconsin), 356 camping units, and 328 picnicking units, plus 17 dredged material disposal islands used as undeveloped recreation areas. The dredged material islands/beaches/camps below the Chippewa River are the third-most heavily-used area within the GREAT I region. Only pools 9 and 10 have more island/beach/camp recreation. Frontenac State Park, Minnesota, is in the area, as are several municipal parks and private recreational developments. Lake Pepin is well known for its sailboating and waterskiing.

2.50 Transportation, Accessibility, and Commercial Uses - Pools 4 and 9 are the two major sources of commercial fish in the Upper Mississippi River. During the 1960's, these two pools ranked either first or second as the pool that provided the greatest commercial fish catch in terms of weight. Five commercial navigation facilities are in pool 4. An analysis of industrial and commercial facilities adjacent to the pool suggests the major commodities originating or terminating in the pool are grain, vegetable oils, and coal. Primary highways closely parallel both sides of the pool. Primary and secondary highways and networks of county and township roads provide lateral access. The highway bridge at Red Wing provides a crossing.

2.51 The following utility, transportation, and commercial industrial activities or easements are on Federal lands in pool 4:

City of Alma - sewer line easement

Northern States Power - two powerline/access road easements

Buffalo Electric Cooperative - electric power transmission line easements

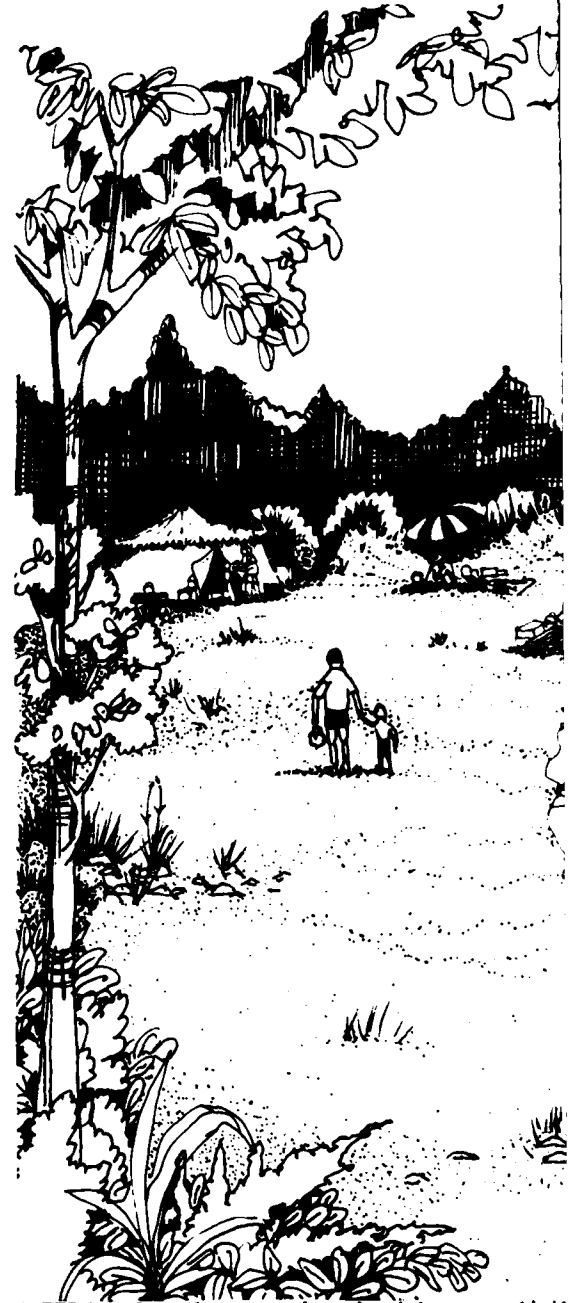


FIGURE 2-2. Over the years, channel maintenance activities have become a resource for water-oriented recreation activities. Many ongoing and future management actions must recognize the beach sites.



Handwritten notes in the top left corner, possibly describing the scene or providing context.



nel maintenance activities have resulted in numerous islands with sandy beaches. These areas have become an important
nation activities. Many islands are heavily used during the summer months for primitive camping and day-use activities.
ions must recognize the need to preserve these opportunities and must develop methods and arrangements for maintaining these

2. BACKGROUND INFORMATION

Burlington Northern Railroad - railroad operation and maintenance

Wisconsin Highway Commission - Wabasha-Nelson bridge/highway construction and scenic easement

2.52 Cultural Areas - Within pool 4 are 130 known archeological sites, including 3 on the National Register of Historic Places. These archeological sites are fairly evenly divided among the various counties in Wisconsin and Minnesota. Within Minnesota, the majority of the known archeological sites in pool 4 are in the vicinity of Red Wing in Goodhue County. In Wisconsin, the greatest number of known sites are in Buffalo County, followed by Pierce and Pepin Counties, each with the same number of sites.

2.53 Only one known historic structure is on the Wisconsin side of pool 4. Many historic properties are in Minnesota, however. Most of these 289 properties are in the towns of Red Wing and Wabasha and were located as a result of the Minnesota Historical Society Historic Site Inventory. These structures are houses, commercial and industrial buildings, and public buildings. Twenty-eight structures are on the National Register of Historic Places. Three historic districts are also on the National Register: the Frontenac Historic District, the West Red Wing Residential District, and the Wabasha Commercial District.

2.54 Natural Resources - Pool 4 has a diversity of valuable fish and wildlife habitats. Fishing, trapping, and hunting are considered excellent in pool 4. This pool is also one of the major sources of commercial fish in the Upper Mississippi River.

2.55 During the winter, the riparian areas just downstream of Lake Pepin are heavily used for roosting by bald eagles and other raptors (eagles, hawks, owls). The Nelson-Trevino Bottoms is one of two areas on the river where the massasauga (swamp rattlesnake) is known to exist. The Nelson-Trevino Bottoms is also the site with the greatest potential for expansion of bald eagle nesting on the northern end of the Upper Mississippi National Wildlife and Fish Refuge. The 3,740-acre Nelson-Trevino Research Natural Area was established in 1972. Its two closed areas provide sanctuary to waterfowl during the waterfowl hunting season. The backwaters are good spawning, nesting,

and rearing areas. The Big Lake and Peterson Lake areas provide high wildlife habitat. Large numbers use the Big Lake area in the early migration period. The Reick's heavily by migrating tundra swans.

2.56 In Pierce County, Wisconsin, the Wisconsin State Conservancy owns a natural area called the Rush River Bottoms. The Wisconsin State has designated the Tiffany Biological Scientific Area and the Nelson-Trevino State Natural Area. The Chippewa River (760-764) is a National Natural Landmark.

Pool 5

TABLE 2-5 - PRINCIPAL FEATURES

Length of pool	14.6 miles
River mile limits	738.1 - 752.7
Average pool elevation	660.0 feet
Pool surface area	10,836 acres
Shoreline miles (meandering outer perimeter)	50 miles
Corps-owned land	7,565 acres
	900 acres
	7,192 acres

2.57 Description - Lock and dam 5 is located 0.5 miles above the mouth of the Minnesota River on the Minnesota side of the main channel of the Upper Mississippi River. The areas through pool 5 show signs of erosion. The lowland and floodplain consist of alluvial fill deposit terraces by glacial stream outwash. The terraces are 1 to 2 miles above lock and dam 5, pool 5 channel are confined within a reach between the Minnesota high ground and the Wisconsin high ground. The sections of the earth dike that form the lock and movable dam section. The main channel follows the Minnesota River about mile 742.5. Then the main channel follows the Wisconsin River through the floodplain until it reaches ground near the downstream city of Wisconsin. From that point, the channel parallels this high ground to lock and dam 5.



ng areas. The Big Lake, Robinson Lake, and Lake areas provide high quality fish and habitat. Large numbers of American wigeon Big Lake area in the early part of the fall period. The Reick's Lake area is used migrating tundra swans.

Pierce County, Wisconsin, The Nature y owns a natural area of State significance Rush River Bottoms. The State of Wisconsin gnated the Tiffany Bottoms as a State c Area and the Nelson-Trevino Bottoms as a ral Area. The Chippewa River Bottoms (miles s a National Natural Landmark.

LE 2-5 - PRINCIPAL FEATURES OF POOL 5

pool	14.6 river miles
limits	738.1 - 752.7
pool elevation	660.0 feet
ice area	10,836 acres
miles	50 miles
ing outer	
r)	
d land	7,565 acres:
	900 acres above
	normal flat pool
	7,192 acres managed by FWS

Description - Lock and dam 5 is 738.1 river ove the mouth of the Ohio River on the side of the main channel. The high bluff ough pool 5 show signs of previous glacial The lowland and floodplain areas basically of alluvial fill deposited in the form of by glacial stream outwash. For about 2-1/2 ove lock and dam 5, pool 5 and the main re confined within a relatively narrow area he Minnesota high ground and two longitudinal of the earth dike that funnel the flow into and movable dam section. Thereafter, the nel follows the Minnesota high ground to le 742.5. Then the main channel meanders he floodplain until it reaches Wisconsin high ear the downstream city limits of Alma, n. From that point, the main channel this high ground to lock and dam 4. Two

small tributaries - the Zumbro River and the White Water River - flow into the pool from the Minnesota side.

2.58 Recreation Facilities - Pool 5 has 9 boat accesses with a total of 13 launching lanes (7 in Wisconsin, 6 in Minnesota) and 222 parking spaces. It also provides 12 marina slips, 16 rental boats, 115 camping units, and 43 picnicking units. Most of the recreational boating activity is in the upper third of the pool. The Weaver Bottoms is a heavily-used hunting area. Pool 5 has 8 dredged material disposal islands used as undeveloped recreation areas. The two major parks are John Latsch State Park in Minnesota and Buena Vista State Park in Wisconsin.

2.59 Transportation, Accessibility, and Commercial Uses - Primary highways either closely parallel the shorelines along both sides of the pool or follow nearby areas within the valley in the same general north-to-south direction. There are no highway bridges between Minnesota and Wisconsin in pool 5. Railroads closely parallel the primary highways on both sides of this pool. Neither airline service nor small airports are available in the immediate area. The only commercial dock in pool 5 handles coal for an electric utility company, Dairyland Power Cooperative.

2.60 The following utility, transportation, and commercial/industrial activities or easements are on Federal lands in pool 5:

Minnesota Department of Highways - Highway 61 construction/maintenance easement

Dairyland Power - 2 electric transmission lines

Wisconsin State Highway Commission - wayside park

Commercial fishermen - dock, holding box, and other commercial fishing facilities - Weaver Landing

2.61 Cultural Areas - Only 22 archeological sites are known in this pool; 19 of these are in Wabasha County, Minnesota. No archeological sites within pool 5 have been placed on the National Register of Historic Places.

2.62 Of the historic sites within pool 5, most are in Wisconsin. Twenty-four historic properties are located here, with most in the communities of Alma, Buffalo, and Cochrane in Buffalo County, Wisconsin.

2. BACKGROUND INFORMATION

Three properties are on the National Register of Historic Places. A multiple-resource district for Alma, which includes some archeological sites, is also on the National Register. Only one historic site within pool 5 has been recorded for Minnesota.

2.63 Natural Resources - Pool 5 provides excellent fish and wildlife habitat. Waterfowl hunting and trapping are considered good. Much of the pool is within the Winona District of the Upper Mississippi National Wildlife and Fish Refuge.

2.64 The Finger Lakes area immediately below lock and dam 4 provides some unique habitat qualities in this reach of the river. The main channel border area below the dam is used by bald eagles as a winter roosting area. The backwaters of the Weaver Bottoms and Belvidere Slough provide excellent spawning, nesting, and rearing areas, although sedimentation plus wind and current action are causing a decline in the fish and wildlife habitat value of these areas. The Weaver Bottoms "closed area" receives significant use from migrating canvasbacks. Both the Weaver Bottoms and Belvidere Slough areas are important for migrating tundra swans. GREAT I recommended a major rehabilitation project for the Weaver Bottoms to preserve and enhance its value. Areas such as Island 42 provide habitat for significant wood duck production. Mozeman's Slough is one of the most heavily fished areas in pool 5, especially for ice fishing. The sand prairie and marsh areas north of the Weaver Bottoms provide habitat for rare species of turtles and many waterfowl.

2.65 The State-managed McCarthy Lake Wildlife Area and a privately-funded peregrine falcon release project are also in this pool.

Pool 5A

TABLE 2-6 - PRINCIPAL FEATURES OF POOL 5A

Length of pool	9.6 river miles
River mile limits	728.5 - 738.1
Average pool elevation	651.0 feet
Pool surface area	6,140 acres
Shoreline miles	35 miles
(meandering outer perimeter)	
Corps-owned land	3,915 acres:
	570 acres above normal flat pool
	3,309 acres managed by FWS

2.66 Description - Lock and dam 5A is above Winona, Minnesota, at mile 728.5 lowest lift (5.5 feet) of the 13 dams area, except for pool 1 and Lower St. A Of the pools below locks and dam 1, p shortest, and it has the smallest water shoreline accessible by land. There are rivers in pool 5A.

2.67 In other respects, this pool has features of a wide floodplain extending valley between high bluffs with the meandering through the alluvial fill a level terraces and lowlands formed by gl The main channel upstream of lock and d the Wisconsin side up to Fountain City (this point, the channel cuts diagonal floodplain to Minnesota and lock and 738.1).

2.68 Recreation Facilities - This pool accesses with 16 launching lanes and spaces. It also has 80 marina slips, 38 163 camping units, and 96 picnicking ur has 10 dredged material disposal is undeveloped recreation areas. Merrick Wisconsin is the only major park. Lo river miles 735 and 736, this park serv access to the river from Wisconsin. narrow park extending northward from Fou with some additional area in the r Merrick State Park is a very popu picnicking, swimming, boating, and fish

2.69 Transportation, Accessibility, and Uses - No commercial navigation f available in this pool. However, from commercial lockages through lock 5A i 1,657 to 2,127. Commercial docking, bo related services are available at vari the pool area. Boat and motor sales are available in the nearby city of Winon Primary highways closely parallel both river. Primary and secondary highways p township roads provide lateral access, b cross the river in pool 5A. The near airport is in Winona, Minnesota.

2.70 The following utility, transpor commercial/industrial activities or eas Federal lands in pool 5A:



ion - Lock and dam 5A is 3 river miles Minnesota, at mile 728.5. It has the (5 feet) of the 13 dams in the study for pool 1 and Lower St. Anthony Falls. Low locks and dam 1, pool 5A is the has the smallest water area and least able by land. There are no tributary 5A.

respects, this pool has the typical side floodplain extending across the high bluffs with the main channel through the alluvial fill and the multi- and lowlands formed by glacial outwash. Upstream of lock and dam 5A follows the up to Fountain City (mile 733). At channel cuts diagonally across the Minnesota and lock and dam 5 (mile

Facilities - This pool has 11 boat launching lanes and 430 parking spaces, has 80 marina slips, 38 rental boats, 100 picnic tables, and 96 picnicking units. Pool 5A has material disposal islands used as recreation areas. Merrick State Park is the only major park. Located between mile 735 and 736, this park serves as a major river from Wisconsin. It is a long, winding northward from Fountain City Bay National area in the river bottoms. Park is a very popular camping, swimming, boating, and fishing attraction.

Navigation, Accessibility, and Commercial commercial navigation facilities are in this pool. However, from 1960 to 1972, traffic through lock 5A increased from 100,000 to 1,000,000 tons. Commercial docking, boat rental, and services are available at various points in the pool. Boat and motor sales and service are near the city of Winona, Minnesota. The pool is closely parallel both sides of the main and secondary highways plus county and state roads provide lateral access, but no highways cross the pool in pool 5A. The nearest commercial port is Winona, Minnesota.

ing utility, transportation, and recreational activities or easements are on the pool 5A:

Northwestern Bell - underground telephone cable easement construction and maintenance

Northern States Power - construction, operation, and maintenance of electric power transmission line

Wisconsin State Highway Commission - construction, use and maintenance of public highways

2.71 Cultural Areas - Known cultural resources within pool 5A are few. No historic properties are recorded for Minnesota. Only 8 archeological sites have been recorded in the Minnesota portion of this pool. Most of these sites are burial mounds located outside of the floodplain. Within this area, 11 archeological sites are known in Buffalo County. Twenty-two known historic sites are in the Wisconsin part of this pool. All of these are known from inventory work conducted by the Wisconsin State Historical Society. The Fugina House in Fountain City, Wisconsin, is on the National Register of Historic Places.

2.72 Natural Resources - Fish and wildlife habitat are generally very good in pool 5A. There is substantial commercial fishing. The low level of water pollution in this pool is not harmful to fish and wildlife. Much of the pool lies within the Winona District of the Upper Mississippi National Wildlife and Fish Refuge.

2.73 The Fountain City Bay area and the extensive backwater between Fountain City, Wisconsin, and Minnesota City, Minnesota, provide excellent hunting, fishing, and trapping. A large heron and egret rookery exists in the Fountain City vicinity. Much of the rich and diverse Fountain City Bay area is within the Whitman Wildlife Area (managed by the Wisconsin Department of Natural Resources). The Fish and Wildlife Service recommends that the Federal land within the overall boundaries of the Whitman Wildlife Area be transferred to the State of Wisconsin. The Thorp Wildlife Management Area is managed by the Minnesota Department of Natural Resources. One closed area provides waterfowl sanctuary during the hunting season.

2.74 Whitman Bottoms Floodplain Forest in Buffalo County is a 170-acre scientific area controlled by the Wisconsin Department of Natural Resources, Bureau of Wildlife Management. The Wisconsin Department of Natural Resources has designated Kammeroski Rookery at mile 734 as a State Natural Area.

2. BACKGROUND INFORMATION

Pool 6

TABLE 2-7 - PRINCIPAL FEATURES OF POOL 6

Length of pool	14.2 river miles
River mile limits	714.3 - 728.5
Average pool elevation	645.5 feet
Pool surface area	8,870 acres
Shoreline miles (meandering outer perimeter)	55 miles
Corps-owned land	337 acres above normal flat pool
	223 acres managed by FWS

2.75 Description - Lock and dam 6 is at river mile 714.3 near Trempealeau, Wisconsin. A railroad right-of-way embankment (owned and operated by the Burlington Northern Railroad) longitudinally divides the pool into two relatively large, equal portions from river miles 717 to 725. The main channel portion lies on the south side of the railroad embankment. This portion of the pool has all the features that are typical of deep-water channel sections of the Upper Mississippi. The north portion, previously known as the Delta Fish and Fur Farm, is now part of the Trempealeau National Fish and Wildlife Refuge. Management of this refuge is intended to enhance the propagation of fish and wildlife for private sport fishing and hunting by permit only. The FWS controls the refuge independently of the main channel levels maintained by the Corps.

2.76 Recreation Facilities - Pool 6 has 11 boat accesses with 16 launching lanes and 570 parking spaces. There are also 547 marina slips, 243 camping units, and 191 picnicking units. Eight dredged material disposal islands in pool 6 are used as undeveloped recreation areas.

2.77 The two major parks adjacent to the pool are Perrot State Park in Wisconsin and Latsch Prairie Island Park in Minnesota. Perrot State Park overlooks pool 6 from the high bluff area between the village of Trempealeau, Wisconsin (mile 715), and Trempealeau Bay (mile 717). The park is over 1,000 acres, provides general day-use recreational facilities scattered along its scenic and natural areas, and includes about 40 campsites. A boat-launching area is at the upstream end of the park on Trempealeau Bay. The entire pool is heavily used by recreationists.



FIGURE 2-3. Natural and man-made features pro catfish, smallmouth bass, and a variety of River.



and man-made features provide many sport-fishing opportunities on the river. Popular species include walleye, northern pike, white bass, bass, and a variety of pan fish. Conservative estimates indicate that several million people annually fish on the Upper Mississippi

2. BACKGROUND INFORMATION

2.78 Most of the recreational boating centers around Winona or immediately downstream. Pleasure craft passing through lock and dam 6 have increased from 3,700 in 1960 to about 5,800 in 1972. This number is continuing to increase.

2.79 Transportation, Accessibility, and Commercial Uses - Pool 6 has 10 commercial navigation facilities. Eight of these facilities are in Winona, Minnesota. Two of these docks serve grain companies, three serve oil companies, two handle coal, and one handles miscellaneous products. Primary highways and railroads closely parallel both sides of the pool. Highways and other roads provide lateral access. The only highway crossing between Minnesota and Wisconsin is at Winona, Minnesota. Winona also has a commercial airport.

2.80 The following utility, transportation, and commercial/industrial activities or easements are on Federal lands in pool 6:

City of Winona - barge-fleeting area

Trempealeau Electric Cooperative - electric transmission line

Northern States Power - powerline easement

Dredging Operator - permit for operations base

Village of Trempealeau - sewer line easement

2.81 Cultural Areas - Pool 6 has 39 known archeological sites. None of these sites are on the National Register of Historic Places. Only 5 of the 39 sites are in Minnesota, all in Winona County. In Wisconsin, most of the known archeological sites are in Trempealeau County, with only 7 in Buffalo County.

2.82 The historic sites of this pool include bridges, houses, industrial buildings, and public buildings. In all, 130 historic structures in the area have been recorded. The majority of these are in Winona, Minnesota. Sixteen of the properties in Winona are on the National Register. Only 16 historic structures are within Trempealeau County, Wisconsin.

2.83 Natural Resources - Pool 6 has some good fish and wildlife habitat, but habitat acreage is limited. A

significant heron rookery is located property in the Winona area. The Straig Blacksmith Slough areas provide fishing trapping. Some areas are popular with l but hunting is generally quite limited.

2.84 The Trempealeau National Wildlife adjacent to the pool 6 planning area. provides excellent habitat for water furbearers, eagles, deer, and other wi Fish and Wildlife Service recently co master plan for the Trempealeau Refuge. DNR has classified Trempealeau Mc Mertes Slough as State Natural Areas.

Pool 7

TABLE 2-8 - PRINCIPAL FEATURES OF I

Length of pool	11.8 river m
River mile limits	702.5 - 714.3
Average pool elevation	639.0 feet
Pool surface area	13,440 acres
Shoreline miles (meandering outer perimeter)	37.1 miles
Corps-owned land	7,066 acres: 1,250 acres al normal 6,880 acres ma

2.85 Description - Lock and dam 7 is at about 4.6 river miles above La Crosse, W the Minnesota side or right bank of the l Between the bluffs, the lowland and floc average over 5 miles wide and consist terraces deposited by glacial stream ou major features of pool 7 include Lak several large island complexes, and the tributary. The extreme lower end of the Wisconsin side is highly suitable for w The land is relatively level and less l interspersed water areas. The shoreline not wooded except for fringe cover considered desirable for extensive la recreation. The upper pool is more extens and more aesthetically attractive than the

2.86 Recreation Facilities - Pool 7 l



brookery is located on private Winona area. The Straight Slough and other areas provide fishing and muskrat areas are popular with local hunters, generally quite limited.

Trempealeau National Wildlife Refuge lies in Pool 6 planning area. This refuge is a habitat for waterfowl, fish, deer, and other wildlife. The Service recently completed its study of the Trempealeau Refuge. The Wisconsin State Natural Areas include Trempealeau Mountain and State Natural Areas.

PRINCIPAL FEATURES OF POOL 7

11.8 river miles
702.5 - 714.3
639.0 feet
13,440 acres
37.1 miles

7,066 acres:
1,250 acres above
normal flat pool
6,880 acres managed by FWS

Lock and dam 7 is at mile 702.5, just above La Crosse, Wisconsin, on the right bank of the main channel. The lowland and floodplain areas are wide and consist of alluvial deposits by glacial stream outwash. The upper pool 7 include Lake Onalaska, sand complexes, and the Black River. The lower end of the pool on the right is highly suitable for water access. The shoreline is generally level and less broken-up by sand bars. The shoreline is generally suitable for fringe cover and is not suitable for extensive land-related activities. The pool is more extensively wooded and more attractive than the lower pool.

Facilities - Pool 7 has 11 boat

accesses with 15 launching lanes and 235 adjacent parking spaces. A total of 46 marina slips, 112 camping units (Wisconsin), 213 picnic units (28 in Minnesota and 185 in Wisconsin), and 4 miles of hiking trails (Wisconsin) are also located here. Pool 7 has 12 dredged material disposal islands used as undeveloped recreation areas. O.L. Kipp State Park in Minnesota and Louis Nelson Park in Wisconsin are the two major parks.

2.87 Transportation, Accessibility, and Commercial

Uses - There are no commercial navigation facilities in this pool. Pool 7 acts as a water link between terminals in other pools. From 1960 to 1972, commercial lockages through lock 7 increased from 1,324 to 2,429. The commercial fishing catch, although still substantial, has declined significantly. Most points along the outer limits of pool 7 are accessible by both railroad and highway. The lower end of the pool on the Wisconsin side (by La Crosse) is especially suitable for access. La Crosse is a focal point for highways servicing both Wisconsin and Minnesota. The crossing nearest to lock and dam 7 is the Interstate Highway 90 bridge.

2.88 The following utility, transportation, and commercial/industrial activities or easements are on Federal lands in pool 7:

City of La Crosse - easement for municipal airport facilities

Dairyland Power - electric transmission lines

State of Wisconsin Highway Commission - construction and maintenance of highways

2.89 Cultural Areas - Pool 7 includes 41 archeological sites and 28 historic properties. One-fourth of the known archeological sites are within Winona County, Minnesota. The majority of the Wisconsin sites are in La Crosse County, which has twice the number known in Trempealeau County. The Midway Village Site, a burial and habitation site dating between AD 200 and AD 1630, is on the National Register of Historic Places.

2.90 Only 28 historic sites are known within pool 7, most in Trempealeau County, Wisconsin. Five are in Winona County, Minnesota, and three are in La Crosse County, Wisconsin.

2. BACKGROUND INFORMATION

2.91 Natural Resources - Pool 7 provides some extremely valuable fish and wildlife habitat. The deltas of Tank Creek, Shingle Creek, and the Black River provide excellent hunting, fishing, and trapping as well as good wood duck production. The Black River Bottoms area holds good potential for bald eagle nesting, and the massasauga (swamp rattlesnake) is known to exist there. Lake Onalaska contains outstanding beds of wild celery and provides migration habitat for large concentrations of migrating canvasbacks as well as for other ducks, Canada geese, and tundra swans. Lake Onalaska also supports a very diverse fishery and is a very popular sport fishing area. Most of Lake Onalaska is closed to hunting and trapping during the duck season.

2.92 Sedimentation in Lake Onalaska and in other backwaters is a major concern in pool 7. The Fish and Wildlife Service has been conducting extensive studies of the area and of its importance to both waterfowl and fish. The FWS will develop a fish management plan for Lake Onalaska.

2.93 The Wisconsin DNR has classified Black River Bottoms, Lake Onalaska, Sunset Point, Upland Plover Nesting Site, and Tank Creek as Natural Areas.

Pool 8

TABLE 2-9 - PRINCIPAL FEATURES OF POOL 8

Length of pool	23.3 river miles
River mile limits	679.2 - 702.5
Average pool elevation	631.0 feet
Pool surface area	20,810 acres
Shoreline miles	85 miles
(meandering outer perimeter)	
Corps-owned land	10,179 acres:
	2,100 acres above normal flat pool
	9,193 acres managed by FWS

2.94 Description - Lock and dam 8 is at river mile 679.2 on the Wisconsin side or left bank of the main channel. The lower pool area has one of the broader expanses in the study area of water surface that is relatively unbroken by interspersed areas of protruding land. The floodplain and lowlands basically consist of alluvial fill deposited in

terraces by glacial stream outwash situated about halfway down the pool. The largest developed recreation areas are the Root River from Minnesota and the Root River from Wisconsin both flow directly into the cities of La Crosse, Wisconsin, (population 3,100) and Onalaska, Wisconsin (population 3,100). Crescent, Minnesota (population 3,100) is at the upper end of the pool. The population within a one mile radius is estimated at about 100,000.

2.95 Recreation Facilities - Pool 8 has 34 launching lanes and parking spaces. It also has 909 miles of hiking trails, 383 picnicking units, 3 beach areas (3 in Wisconsin, 1 in Minnesota). Pool 8 has 16 dredged islands used as underdeveloped recreation areas. One of the undeveloped shoreline areas in the main channel north of Genoa to Brownsville is heavily used for waterskiing.

2.96 Transportation, Accessibility - Three commercial navigation locks are located in pool 8, with five more on the Black River. (The Black River has two locks entering pool 7 and one that is in pool 8). These facilities include four that provide access to NSP, Socony Mobil, Texas Eastern, La Crosse Coal company. Another transshipment facility is Cargill. From 1960 to 1972, commercial traffic through lock 8 increased from 1,670,000 tons to 1,800,000 tons. It is paralleled by primary and secondary roads that connect with highways leading to the pool area. A highway bridge crosses the main channel north of La Crosse and La Crescent, and Interstate 90 crosses just downstream of lock and dam 8.

2.97 The following utility, transportation, commercial/industrial activities or Federal lands in pool 7:

- Lee Association - radio transmission
- Village of Stoddard - dump site, sewer
- Northern Natural Gas Company - pipeline
- Dairyland Power - construction, maintenance of electric power transmission



glacial stream outwash. Goose Island, about halfway down the pool, is one of the developed recreation areas in the District. The river from Minnesota and the La Crosse River in Wisconsin both flow directly into pool 8. The La Crosse, Wisconsin, (population of 51,153), La Crosse, Wisconsin (population 4,909), and La Crosse, Minnesota (population 3,142) are near the mouth of the pool. The population within a 50-mile radius is estimated at about 100,000.

Recreation Facilities - Pool 8 has 21 boat launches with 34 launching lanes and 975 associated slips. It also has 909 marina slips, 530 picnic sites, 383 picnicking units, 4 road access points (3 in Wisconsin, 1 in Minnesota), and 17 hiking trails (16 in Wisconsin, 1 in Minnesota). Pool 8 has 16 dredged material disposal areas and is underdeveloped recreation areas. The Brownsville area is one of the most heavily used shoreline areas in the study area. The area from Genoa to Brownsville and north of Brownsville is heavily used for powerboating and

Transportation, Accessibility, and Commercial Facilities - Pool 8 has five commercial navigation facilities are on pool 8, with five more facilities on the Black River. (The Black River has two channels, one on pool 7 and one that is part of pool 8.) Facilities include four that supply coal and oil to NSP, Socony Mobil, Texas Oil Company, and a coal company. Another trans-ships grain for export. From 1960 to 1972, commercial lockages on pool 8 increased from 1,670 to 2,135. Pool 8 is reached by primary and secondary highways that cross the river. A highway bridge crosses the river between La Crosse and La Crescent, and Interstate Highway 90 crosses the river downstream of lock and dam 7.

Following utility, transportation, and industrial activities or easements are on pool 8:

Radio transmission towers

Stoddard - dump site, sewer line

Natural Gas Company - pipeline and stations

Power - construction, operation, and maintenance of electric power transmission line

Minnesota Department of Highways - construction and maintenance of Highways 26, 61, 14, and I-90

Northern States Power - electric transmission line

Wisconsin Highway Commission - construction and maintenance of Highways 35 and I-90

Harbor Services, Inc. - barge-fleeting area

City of La Crosse - Pammel Creek flood control project

2.98 Cultural Areas - Very few of the known cultural resources within pool 8 are in Minnesota. Only 7 archeological sites and 4 historic properties are recorded in Houston County along the river.

2.99 Forty-three archeological sites are known in La Crosse County, Wisconsin. Two of these, the Overhead Site and the Valley View Site, are on the National Register of Historic Places. Both sites were investigated recently by the Anthropology Department of the University of Wisconsin, La Crosse. Twelve known archeological sites are in Vernon County, Wisconsin. One site, at Goose Island, is on the National Register. All but 10 of the 442 Wisconsin historic sites in this pool are in La Crosse County. Five properties are on the National Register of Historic Places, and 33 structures have been determined eligible for the National Register.

2.100 Natural Resources - Pool 8 provides good fish and wildlife habitat. The pool is also of major importance for commercial fishing. Hunting, fishing, and trapping are considered excellent throughout the extensive backwaters in the Blue Lake, Target Lake, and Upper Goose Island areas. A significant heron rookery is in the Root River delta. Crosby Slough provides excellent waterfowl hunting.

2.101 Diving duck use, especially by canvasbacks, was traditionally quite high in pool 8. However, an 83-percent decline in wild celery between 1975 and 1980 led to a 90-percent decline in canvasback use. The Fish and Wildlife Service is presently investigating this decline and is searching for possible causes and potential means of restoration. One large source of silt and a possible contributing factor to resource loss is the Root River. Despite its problems, pool 8 still has significant wood duck production, and the

2. BACKGROUND INFORMATION

large closed area in the lower pool provides migration habitat for diving ducks, tundra swans, Canada geese, and other waterfowl.

2.102 Wisconsin has designated Turtle Nesting Site (mile 685) as a Natural Area. Four natural areas of county significance in La Crosse County include West Channel Woods, Goose Island, Interstate Bridge Woods, and Smith Slough Flood Plain Forest. Vernon County sites include Lower Goose Island, Crosby Slough, and Cook Creek Marsh.

Pool 9

TABLE 2-10 - PRINCIPAL FEATURES OF POOL 9

Length of pool	31.3 river miles
River mile limits	647.9 - 679.2
Average pool elevation	620.0 feet
Pool surface area	29,125 acres
Shoreline miles (meandering outer perimeter)	90 miles
Corps-owned land	8,950 acres: 2,000 acres above normal flat pool 8,190 acres managed by FWS

2.103 Description - Lock and dam 9 is at Lynxville, Wisconsin, 647.9 river miles above the mouth of the Ohio River. The total water area of the pool plus all Federal above-water lands within acquisition limits give pool 9 the largest federally-managed area of any pool in the study area. The Bad Axe River from Wisconsin and the Upper Iowa River from Iowa are small tributaries that flow into the Mississippi River in pool 9. The main river channel parallels the high Wisconsin shoreline from lock and dam 9 upstream to the village of Lynxville. Above that point, the main channel angles sharply across the valley to the Iowa shoreline, which it then parallels to the town of Lansing. The river again angles across the valley to the village of De Soto, Wisconsin, and continues upstream at or near Wisconsin high ground until it reaches lock and dam 8 at Genoa, Wisconsin.

2.104 Recreation Facilities - Pool 9 has 16 boat accesses with 21 launching lanes (2 in Minnesota, 13 in Wisconsin, 6 in Iowa) and 408 adjacent parking spaces. It also has 216 marina slips (70 in

Wisconsin, 146 in Iowa), 180 camping units, 180 picnicking units, and 2 miles of hiking trails. Hunting, fishing, boating, waterskiing, and other activities are concentrated in the upper two-thirds of the pool. This pool is one of the most heavily fished pools in the study area. Pool 9 has 11 dredged material disposal islands used as undeveloped recreation areas. The only major park in the area is Blackhawk State Park, which is managed by the Corps.

2.105 Transportation/Accessibility, and Commercial Uses

- There are two commercial navigation facilities in pool 9. Primary highways closely parallel the river along the Wisconsin side and along the upper half of the Iowa and Minnesota side. Secondary highways provide adequate access along the lower half of the pool in Iowa. One highway bridge exists at Lynxville. The railroad tracks and steep adjacent bluffs provide access to the water.

2.106 Pool 9 and pool 4 share the distinction of being the most important pools for commercial fishing in the northern section of the Upper Mississippi River. Pool 9 ranks first in commercial value in pool 9. Catfish catch is also significant. The average (1953-1964) catch for all commercial species in pool 9 was 1,333,856 pounds. Only pool 4 exceeded this figure during that period. The average harvest of furbearers is also a significant commercial activity, with muskrats the prime species harvested.

2.107 The nearest commercial airline service is available at La Crosse, Wisconsin. However, there are small airports at several smaller towns for private planes.

2.108 The following utility, transportation, commercial/industrial activities or easements are located on Federal lands in pool 9:

Wisconsin State Highway Commission - construction and maintenance of Highways 35 and 82

Dairyland Power - 161KV power transmission line barge-fleeting area

Northern States Power - electric power transmission line

Minnesota Highway Commission - construction and maintenance of Highway 26

Town of New Albin - diversion ditch



owa), 180 camping units, 149
2 miles of hiking trails (Iowa).
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Accessability, and Commercial
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utility, transportation, and
activities or easements are on
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s 35 and 82

1KV power transmission line,

- electric power transmission

ommission - construction and
26

ersion ditch

Vernon County - construction and maintenance of access
road

Iowa State Conservation Commission - construction and
maintenance of New Albin access road

Commercial Fishermen - permit for operation base

2.109 Cultural Areas - The cultural resources of pool
9 are primarily archeological resources. Eighty-eight
sites are within the pool: 33 in Wisconsin, 51 in
Iowa, and 4 in Minnesota. At one time there were an
estimated 30,000 Indian burial mounds in Iowa. Most
of these mounds are on prominent ridges or bluffs
along the rivers and larger streams. The mounds occur
in clusters or groups. A single site sometimes
contains more than 100 mounds. Mounds are in three
forms: conical (round), linear (long), and effigy.
The effigy mounds are large, elaborately-shaped animal
forms that may measure as much as 100 feet across.
Effigies in this region usually resemble birds and
bears.

2.110 One historic site is known in Houston County,
Minnesota; two are known in Allamakee County, Iowa;
and 11 are known in Vernon and Crawford Counties,
Wisconsin. The two properties in Lansing, Iowa, are
on the National Register.

2.111 Natural Resources - The relatively high water
quality in pool 9 contributes to the good fish and
wildlife habitat, although sedimentation is causing a
decline in fish habitat. Pool 9 and pool 4 are the
most important pools in the northern section of the
Upper Mississippi River for commercial fishing. There
is also a significant amount of mussel fishing,
largely because of the Japanese demand for freshwater
clamshells.

2.112 Capoli Slough, Reno Bottoms, Winneshiek Slough,
Big Lake, and Minnesota Slough provide a diversity of
habitats. These areas offer excellent waterfowl
hunting and furbearer trapping. The latter three
areas plus the main channel border north of Lansing
also provide excellent sport fishing. The closed area
in the lower portion of pool 9 receives very high
diving duck use. Together with Lake Onalaska, this
closed area provides the major food resource for
migrating canvasbacks. The Big Lake and Reno Bottoms
areas provide migration habitat for large numbers of
American wigeon, mallards, gadwalls, and other
dabblers.

2. BACKGROUND INFORMATION

2.113 The 1980-acre Reno Bottoms Research Natural Area was established in 1972. In addition to wood duck production and significant heron rookery areas, the Reno Bottoms area provides the most significant bald eagle production on the Upper Mississippi River.

2.114 Natural areas of county significance include Waiter Lake Flood Plain Forest (Vernon County), Winneshiek Slough, Forester's Tern Colony, and Chain and Ambrough Sloughs (Crawford County).

Pool 10

TABLE 2-11 - PRINCIPAL FEATURES OF POOL 10

Length of pool	32.8 river miles
River mile limits	615.1 - 647.9
Average pool elevation	611.0 feet
Pool surface area	17,070 acres
Shoreline miles (meandering outer perimeter)	110 miles
Corps-owned land	3,794 acres: 480 acres above normal flat pool 3,634 acres managed by FWS

2.115 Description - Lock and dam 10 is at river mile 615.1, adjacent to downtown Guttenberg, Iowa. Prairie du Chien, Wisconsin, with a population of 5,540, is the largest city on the pool. Guttenberg, Iowa, with a population of 2,177, is the largest Iowa city on the pool. Total population in the zone is estimated at 90,000, with 30,000 in Wisconsin and 60,000 in Iowa. Pool 10 is the second longest pool with the second longest shoreline in the St. Paul District. However, it has less water area than some other, shorter pools because the valley and flood plain area between the bluffs become increasingly narrow at the lower end of the pool. The Wisconsin River, at mile 631, enters pool 10, as does the Yellow River at mile 642, a smaller tributary from Iowa.

2.116 Recreation Facilities - Pool 10 has 33 boat accesses with 47 launching lanes and 1,700 nearby parking spaces. It also has 785 marina slips, 130 rental boats, 141 camping units, and 212 picnicking units. Trails include 73 miles for hiking, 28 miles for cross-country skiing and 17 miles for horseback riding. Records of pleasure boat traffic through lock and dams 9 and 10 show a small increase over the last

decade. Pool 10 has 15 dredged islands used as undeveloped recreation parks and forests include the National Effigy Mound National Monument at Pike's Peak State Park and Yellow River and Wisconsin's Wyalusing State Park.

2.117 Transportation Accessibility,

Uses - Primary highways closely parallel along both sides through most of the Wisconsin River, but below that inland for a considerable distance before the area immediately bordering the bridge at Prairie du Chien provides access to Iowa and Wisconsin. Five commercial needs of pool 10. Three docks are on side of the river. These serve Prairie handle coal, salt, fertilizer, steel, attractive grain-shipping docks serve Commercial lockages through pool 10 gradually over the last decade. Commercial although substantial in pool 10, is on the volume of pool 9. Commercially available boat rental, and related services at various points in the pool area. Boat service are also available at large generally in the large municipalities.

2.118 The following utility, transportation, commercial/industrial activities or Federal lands in pool 10:

Wyalusing Township - public road easement

Interstate Power Company - powerline maintenance

Crawford County Electric Company - transmission (Ambro Slough area)

Wisconsin Highway Commission - relocation and 60 - construction and maintenance

2.119 Cultural Areas - Of all the Paul District, pool 10 has the greatest diversity of known cultural resources.

2.120 Two hundred seventy-two archeological districts are known within the pool twenty of these are in Iowa. Effigy Monument in Allamakee and Clayton Counties on the National Register of Historic Places by the National Park Service, the most



Pool 10 has 15 dredged material disposal sites and undeveloped recreation areas. Major sites include the National Park Service National Monument at mile 627, Iowa's State Park and Yellow River State Forest, and Wyalusing State Park at mile 629.

Transportation Accessibility, and Commercial

Highways closely parallel the pool through most of the area upstream of the river, but below that point, they loop a considerable distance before returning to the river, immediately bordering the pool. A highway through the Prairie du Chien provides a crossing between Wisconsin and Iowa. Five commercial docks serve the pool. Three docks are on the Wisconsin side. These serve Prairie du Chien and McGregor, Iowa. Two bulk-shipping docks serve McGregor, Iowa. Shiploads through pool 10 have increased in the last decade. Commercial fishing, which is only 30 percent of the catch in pool 9. Commercially available docking and related services are available at the pool area. Boat and motor sales are also available at larger facilities, such as the large municipalities.

Following utility, transportation, and industrial activities or easements are on pool 10:

Ship - public road easement

Power Company - powerline construction and

Electric Company - transmission line (area)

Army Commission - relocation of Routes 18 and maintenance

Areas - Of all the pools in the St. Louis River, pool 10 has the greatest number and variety of cultural resources.

Over seventy-two archeological sites are known within the pool. One hundred sites are in Iowa. Effigy Mounds National Monument and Clayton County, Iowa, is on the National Register of Historic Places. Operated by the National Park Service, the monument annually

draws large numbers of people who view the burial mounds along the bluffs of the river. This site (located below the monument) is also on the National Register. Pool 10 also contains several of the larger early-day outposts and settlements. Principal existing cities on pool 10 that have developed from this early era are Prairie du Chien, Wisconsin, and Guttenberg, Iowa. These early towns were significant centers for the fur trade, steamships, and railroads.

2.121 In Crawford and Grant Counties, Wisconsin, an additional 152 archeological sites along the river have been recorded. One site, the Pedretti III site, is on the National Register; and two districts, the St. Feriole Island Historic and Archeological District and the Marais Lake Archeological District have been determined eligible for the National Register.

2.122 The majority of the 243 historic properties in this portion of the study area are in Guttenberg, Iowa. Two properties are on the National Register. Four historic properties have been recorded in Grant County, and 14 have been recorded in Crawford County, Wisconsin. Many historic structures in Prairie du Chien are within the St. Feriole Island Historic and Archeological District. The State Historical Society of Wisconsin maintains and operates Villa Louis, the American Fur Company Warehouse, the Brisbois House, and the Rollette House. The Villa Louis is open to the public. The Dousman House Hotel, on St. Feriole Island, is also on the National Register. Many of these structures are also National Historic Landmarks. Three historic properties located on mainland Prairie du Chien are also on the National Register. One of these is Second Fort Crawford, which was constructed in 1829.

2.123 **Natural Resources** - The relatively low level of water pollution in pool 10 contributes to good fish and wildlife habitat, although fluctuating water levels cause significant problems. Fishing, hunting, and trapping are considered excellent throughout the extensive backwaters. Mussel fishing is also increasing in this pool.

2.124 Harper's Slough, Gernet Lake, the Johnson Slough area, the Wyalusing Slough area, Gremore Lake, Ambro Lake, the Bagley Bottoms, and the Ferry Slough area are used extensively for camping and boating. Production of great blue heron and wood duck is significant. Bald eagles roost in good numbers along open-water stretches during the winter. Populations of the endangered Higgins' eye mussel are known in the

2. BACKGROUND INFORMATION

East Channel at Prairie du Chien, Wisconsin, and at McMillan Island above Guttenberg, Iowa. A small closed area above lock and dam 10 provides sanctuary for waterfowl during the hunting season.

2.125 Natural areas of county significance include McGregor and Gernett Lakes. The Wisconsin Department of Natural Resources has three natural areas - Lowland Woods (mile 621), Cliffs Woods (mile 618), and Eagle Valley (mile 614).

CORPS-OWNED RECREATION AREAS

Corps-Operated Recreation Sites

2.126 The St. Paul District of the Corps of Engineers maintains and operates five recreational areas along the Mississippi River. A brief summary of each of these recreation sites follows.

2.127 Sturgeon Lake Access - This site covers 2 acres at Sturgeon Lake on the right descending bank of the river adjacent to mile 798.5 in pool 3. Present facilities include a two-lane boat-launching ramp and a parking lot with 8 car spaces plus 15 car-and-trailer spaces. No sanitary facilities are available at this site.

2.128 Millstone Landing - This site covers 15 acres in the right descending bank backwaters adjacent to mile 677 in pool 9. Facilities include two picnic tables, a vault toilet, a one-lane launching ramp and a 22-space car-and-trailer parking lot.

2.129 Bad Axe Landing - This 5-acre site is on the left descending bank of the river at mile 675 in pool 9. A one-lane boat-launching ramp and a 20-space car-and-trailer parking lot are provided for users. Additional facilities include two picnic sites and a vault toilet.

2.130 Blackhawk Recreation Area - This 225-acre Corps-managed area on the left descending bank of the river between miles 670 and 671 is the largest public use facility in pool 9. Facilities include 146 campsites and 69 picnic sites. Electrical hookup is available for campers. Potable water and vault toilets are provided. Additional facilities include two one-lane boat-launching ramps and three parking lots with a total of 60 car spaces plus 20 car-and-trailer spaces. Among current development plans is a shoreline protection project to control an erosion problem.

TABLE 2-12 - SUMMARIZED PROJECT DATA

Item	USAF	LSAF	1	
Adjacent States	MN only	MN only	MN only	
River Mile Limits	853.8-864.7	853.4-853.8	847.7-853.4	8 8
Length of Pool (river miles)	10.9	.4	5.7	
Average Pool Elevation (feet above mean sea level)	798.3	750.0	725.1	6
Shoreline Miles	25.0	1.5	11.6	
Major Highway Access	I-35W (MN)	I-35W (MN)	I-35W I-94 (MN)	U U
Land (acres) owned by Corps. ^c	Combined = 13		33	
Pool Surface Area (acres)	974	51	546	
Land (acres) Managed by Dept. of Interior ^d	0	0	0	

a Includes 25.0 river miles on Minnesota

b Includes 24.5 river miles on St. Croix

c Source: Natural Resource Management

d GREAT I Recreation Study, Volume 6, 1 Department of Interior.

e Leased to Minnesota State Wildlife Service



ZED PROJECT DATA

SUMMARIZED PROJECT DATA

LSAF	1	2	3	4	5	5A	6	7	8	9	10
MN only	MN only	MN only	WI, MN	WI, MN	WI, MN	WI, MN	WI, MN	WI, MN	WI, MN	WI,IA, MN	WI, IA
853.4- 853.8	847.7- 853.4	815.2- 847.7	796.9- 815.2	752.7- 796.9	738.1- 752.7	728.5- 738.1	714.3- 728.5	702.5- 714.3	679.2- 702.5	647.9- 679.2	615.1- 647.9
.4	5.7	57.5 ^a	42.8 ^b	44.2	14.6	9.6	14.2	11.8	23.3	31.3	32.8
750.0	725.1	687.2	675.0	667.0	660.0	651.0	645.5	639.0	631.0	620.0	611.0
1.5	11.6	110	37.1	155	50	35	55	37.1	85	90	110
I-35W (MN)	I-35W I-94 (MN)	U.S.10 U.S.61 (MN)	U.S.61 (MN) I-94 (MN-WI)	U.S.61 (MN) WI 35 (WI)	U.S.61 (MN) WI 35 (WI)	U.S.61 (MN) WI 35 (WI)	U.S.61 (MN) WI 54 (WI)	U.S.61 (MN) U.S.55 (WI) I-90 (MN-WI)	U.S.26 (MN) WI-35 (WI)	U.S.26 (IA) WI 35 (WI)	U.S.52 (IA) U.S.18 (WI)
ed = 13	33	1,219	5,605	2,900	7,565	3,915	337	7,066	10,179	8,950	3,794
51	546	9,652	17,950	35,198	10,836	6,140	8,870	13,440	20,810	29,125	17,070
0	0	0	4,123 ^e	2,811	7,192	3,309	223	6,880	9,193	8,190	3,634

r miles on Minnesota River.

r miles on St. Croix River.

Resource Management Section, Corps of Engineers.

Study, Volume 6, 1980, does not include refuge lands owned in fee title by the
ior.

a State Wildlife Service.

2. BACKGROUND INFORMATION

2.131 Jay's Lake Access - This area is a 20-acre Corps-managed recreation site in the backwaters of the left descending bank adjacent to mile 622 in pool 10. Public use facilities include a one-lane boat-launching ramp and parking spaces for 30 cars and trailers. Four picnic sites and vault toilets are also available.

Recreation Sites Leased from the Corps

2.132 A number of sites along the Mississippi River owned in fee title by the Corps are leased to other agencies and operated as recreation areas. The most significant leased areas are summarized below.

2.133 Riecks Lake Park - This Corps-owned site in pool 4 is leased and managed by the city of Alma, Wisconsin. The 13-acre site is in the backwaters of the left descending bank of the river adjacent to mile 755. The park provides 30 picnic sites, 21 camping sites, electrical hookup, on-site water supply, and vault toilets. A one-lane boat-launching ramp and two parking lots with a total of 15 car spaces plus 15 car-and-trailer spaces complete the available facilities.

2.134 Alma Nelson Park - This 1-acre site in pool 4 along Wisconsin State Highway 35 and adjacent to Riecks Lake Park is leased to the Wisconsin Highway Commission for use as a wayside highway park. Three picnic sites and parking for 10 cars are provided.

2.135 Spring Lake Park - This narrow, 22-acre shoreline property in pool 5 is leased to the city of Buffalo, Wisconsin. The leased site stretches from about mile 746 north of Buffalo to Spring Lake adjacent to mile 742. Public use facilities provided are two ramps with three launching lanes and two parking lots with a total of 20 car spaces plus 20 car-and-trailer spaces.

2.136 Lizzy Pond Way - This 1-acre site in pool 5 on Lizzy Paul's Pond is adjacent to Wisconsin State Highway 35 behind the left descending bank of the river near mile 748. The Wisconsin Highway Commission leases the site for use as a wayside park. Four picnic sites and parking spaces for 10 cars are provided.

2.137 Onalaska Landing - This narrow, 95-acre shoreline property along the northeast shore of Lake Onalaska in pool 7 is leased to Onalaska Township. Five acres are developed for public use with a two-

lane boat-launching ramp and parking 10 car-and-trailer spaces.

2.138 Nelson Park - The Nelson Park has two areas on French Island in pool 8, Crosse County, Wisconsin: a 4-acre area at the northernmost tip of the island and a 1-acre area where the dike intersects the western shore. Facilities include two ramps with four parking lots, 10 car spaces plus 90 car-and-trailer spaces, a ballfield, 52 picnic sites, and two vault toilets provided. Proposed developments include picnic shelters, and additional parking spaces.

2.139 Goose Island Park - This 645-acre site in the backwaters of the left descending bank of the river to miles 691-693 in pool 8 is leased to the city of Crosse County, Wisconsin. A concessionaire with the county operates a snack bar, a gift shop; rents canoes and boats; and a campground. Over 10 miles of road provide access and about the 230 developed acres. Public use facilities include 500 picnic sites, shelter houses, 18 toilets, a beach, 10 campsites, electrical hookups, and a boat launch. Four boat ramps and five parking lots provide 80 car spaces plus 65 car-and-trailer spaces. The list of available facilities. Proposed developments include expansion of campgrounds, improved sanitary facilities, road improvements, a boat-launching ramp and parking lot.

2.140 Wildcat Park - This 105-acre site on the left descending riverbank adjacent to mile 685 just south of Brownsville, is leased to the city of Le Sueur County, Minnesota. Land access is provided by Highway 26. The 50 developed acres feature 47 picnic sites, 29 campsites, 18 toilets, a swimming area, and a potting area. Completing the public use facilities are a launch ramp and three parking lots with 10 car spaces plus 30 car-and-trailer spaces. Future improvements include an expansion of picnic areas, new toilet facilities, a small boat parking lot, a tennis court, and a playground.

2.141 Stoddard Park - This 34-acre site is adjacent to mile 685 on the left descending bank of the Mississippi in pool 8. The site is owned by the city of Stoddard, Wisconsin, providing boat-launching ramps, two parking lots



-launching ramp and parking for 5 cars plus
d-trailer spaces.

Nelson Park - The Nelson Park lease consists of
s on French Island in pool 7 leased to La
ounty, Wisconsin: a 4-acre site at the
ost tip of the island and a 3-acre site where
intersects the western island shore.
s include two ramps with four launching lanes
ied by three parking lots with a total of 40
es plus 90 car-and-trailer spaces. A
52 picnic sites, and two vault toilets are
Proposed developments include ramp improve-
cnic shelters, and additional fences.

Lake Island Park - This 645-acre park in the
s of the left descending riverbank adjacent
691-693 in pool 8 is leased to La Crosse
Wisconsin. A concessionaire under contract
county operates a snack, bait, and tackle
ts canoes and boats; and administers the
nd. Over 10 miles of road provide access to
t the 230 developed acres of the park.
e facilities include 500 picnic sites, 5
houses, 18 toilets, a beach area, over 400
electrical hookups, and a concession stand.
ramps and five parking lots with a total of
aces plus 65 car-and-trailer spaces complete
of available facilities. Proposed future
ts include expansion of camping facilities,
sanitary facilities, road work, and a boat-
ramp and parking lot.

Decorah Park - This 105-acre site on the right
g riverbank adjacent to mile 688 in pool 8,
h of Brownsville, is leased to Houston
Minnesota. Land access is from Minnesota
26. The 50 developed acres of the park
7 picnic sites, 29 campsites, 6 vault
swimming area, and a potable water supply.
g the public use facilities are a two-lane
p and three parking lots with a total of 50
plus 30 car-and-trailer spaces. Proposed
rovements include an expanded water system,
t facilities, a small-boat harbor with
ot, a tennis court, and a sand volleyball

Waddard Park - This 34-acre recreation site is
to mile 685 on the left descending bank of
Mississippi in pool 8. The site, leased to the
Waddard, Wisconsin, provides two one-lane
hing ramps, two parking lots with a total of

30 car spaces plus 10 car-and-trailer spaces, five
campsites, and a vault toilet.

2.142 Frenchtown Park - This 11-acre site leased to
Clayton County, Iowa, is on the right descending bank
of the river on Frenchtown Lake, north of Guttenberg,
Iowa in pool 10. The park features five picnic sites,
two vault toilets, and potable water on site. Boat
and vehicle facilities include a one-lane launching
ramp and a parking lot with 10 car spaces plus 10 car-
and-trailer spaces.

2.143 Bussey Lake Park - This 6 acre-site at Bussey
Lake is on the right descending bank adjacent to mile
617 in pool 10. The site, leased to the Iowa Conser-
vation Commission, provides a two-lane boat-launching
ramp, vault toilet, and parking lot with 20 car spaces
plus 50 car-and-trailer spaces.

2.144 River of Lakes Marina Concession - This area is
1 mile south of Bagley, Wisconsin, on the left bank of
the river near mile 622.5 in pool 10. This facility
includes a 120-unit campground with electric hook-ups,
a one-lane boat launch, playground, and concession.

2.145 Guttenberg Park - The city of Guttenberg, Iowa,
leases 4 acres of Corps land along the levee in pool
10 adjacent to the city and above lock and dam 10.
Facilities provided for public use include sanitary
facilities with flush toilets, drinking water, 29
picnic sites, and two parking lots with 100 car spaces
plus 100 car-and-trailer spaces.

LAWS APPLICABLE TO RESOURCE DEVELOPMENT AND MANAGEMENT

2.146 This section discusses the Federal statutes,
other applicable laws, executive orders, interagency
agreements, and regulations that affect development
and management of the Upper Mississippi River system.
These laws and other guidance have been considered
during development of this study.

Federal Statutes with Major Impacts

2.147 Public Law 68-268, June 7, 1924 - The Upper
Mississippi River Wild Life and Fish Refuge Act (43
Statute 650) authorized a refuge between Rock Island,
Illinois, and Wabasha, Minnesota. (Originally
administered by the U.S. Department of Agriculture,
this refuge is now under the jurisdiction of the U.S.
Department of the Interior, Fish and Wildlife
Service.) The Upper Mississippi National Wildlife and
Fish Refuge is designated a refuge and breeding place

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for migratory birds. As prescribed by the Secretary of the Interior through regulations, this area also serves as a refuge and as a breeding and conservation area for other wild birds, game animals, furbearing animals, wildflowers, aquatic plants, fish, and other aquatic animal life.

2.148 Public Law 78-534, December 22, 1944 - Section 4 of the Flood Control Act of 1944 (58 Statute 887), as amended, authorizes the Chief of Engineers to construct, operate, and maintain public park and recreational facilities at water resource projects. It also requires that the water areas of all such projects be open to public use for boating, fishing, and other recreation and that ready access to and exits from such areas be maintained for general public use when in the public interest.

2.149 Public Law 79-732, August 14, 1946 - Section 3 of the Fish and Wildlife Coordination Act of 1946 (60 Statute 1080) provides for use of water resource projects for the conservation, maintenance, and management of wildlife resources and wildlife habitat, to be administered by State agencies or the Secretary of the Interior. In accordance with this act, General Plans for the Use of Lands and Waters of the Navigation Channel Project for Wildlife Conservation and Management were formulated and approved by the Secretary of the Army, the Secretary of the Interior, and the heads of pertinent State agencies.

2.150 Public Law 85-624, August 12, 1958 - The Fish and Wildlife Coordination Act of 1958 (72 Statute 563) requires that fish and wildlife conservation receive equal consideration with other project purposes and that they be coordinated with other features of water resource development programs. All planning and project development must be coordinated with the Fish and Wildlife Service.

2.151 Public Law 86-523, June 27, 1960 - The Reservoir Salvage Act of 1960 (74 Statute 220), as amended by Public Law 93-291 (88 Statute 174), specifically provides for preservation of historical and archeological data that might otherwise be irreparably lost or destroyed as a direct result of any Federal construction project or any federally-licensed project, activity, or program. For Federal construction projects, up to 1 percent of the authorized appropriation for the project may be expended for survey and mitigation work. For emergency programs, no recovery or mitigation work is required if such work would impede the emergency action.

2.152 Public Law 86-645, July 14, 1960 - of the River and Harbor Act of 1960 (74 Statute 645), as amended, provides authority for the Corps of Engineers to develop and construct small navigational facilities including small-boat harbors for recreation. Although Section 107 authorizes the Corps to construct such projects, only general facilities can be provided as a Federal responsibility and interior dredging responsibilities.

2.153 Public Law 87-714, September 28, 1962 - The Refuge Recreation Act (76 Statute 653), authorizes the Secretary of the Interior to establish, acquire, and manage public recreation areas, refuges, hatcheries, and other conservation facilities for recreational use, when such uses do not interfere with the primary purposes of these areas. The act authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife-oriented development or for protection of natural resources. It also authorizes charging fees for public use.

2.154 Public Law 88-578, September 3, 1964 - The National Water Conservation (LAWCON) Fund Act of 1964 (78 Statute 897), as amended, established a fund to which public agencies must contribute for outdoor recreation needs. The act authorized acquisition of land for federally-administered recreation areas and grants for State recreation planning and development. State, county, and city parks along the Mississippi River have been developed with this money.

2.155 Public Law 89-72, July 9, 1965 - The Water Project Recreation Act of 1965 (79 Statute 234), as amended, established recreation at Federal water resources projects as a full project purpose. The act requires consideration of recreation and of fish and wildlife enhancement in planning and resources projects. Section 2(a) specifies that benefits for recreation must be included in the economic analyses of proposed projects. If a Federal public agency agrees to administer a facility at its expense and to pay a non-separable first cost. Section 3(b) authorizes acquisition to preserve the recreation potential of a project for a 10-year period, when no other use can be found. Section 9 limits the maximum amount for recreation and fish and wildlife enhancement to 10 percent of the total project cost. The act requires beneficiaries to bear part of the cost.



45, July 14, 1960 - Section 107 of the Harbor Act of 1960 (74 Statute 484), gives authority for the Corps to construct small navigation projects, harbors for recreational boaters. This act authorizes the Corps to plan and construct, only general navigational projects provided as a Federal project. Harbors and interior dredging are local

714, September 28, 1962 - The Recreation Act (76 Statute 653), as amended, authorizes the Secretary of the Interior to administer and other conservation areas for recreation. Such uses do not interfere with the uses of these areas. This act authorizes construction and maintenance of recreation facilities and the acquisition of land and wildlife-oriented recreational protection of natural resources. Charging fees for public use.

78, September 3, 1964 - The Land and Water Conservation Fund Act of 1965 (78 Statute 2241), established a fund to help meet outdoor recreation demands and authorized acquisition of lands for recreation areas plus matching recreation planning and for State and local administration and development. Various State and city parks along the Upper Mississippi have been developed with LAWCON

72, July 9, 1965 - The Federal Recreation Act of 1965 (79 Statute 213), authorized recreation at Federal water projects as a full project purpose. This act provides for recreation opportunities and life enhancement in planning water projects. Section 2(a) specifies that recreation must be included in the planning of proposed projects when a non-Federal agency agrees to administer the project and to pay half of the cost. Section 3(b) authorizes land acquisition to preserve the recreation potential of a project area, when no local sponsor is available. Section 9 limits the maximum allocation for fish and wildlife enhancement to 50 percent of project cost. The act further requires the States to bear part of the costs of

installing and managing recreation developments at Federal water resource projects.

2.156 Public Law 89-80, 22 July 1965 - The Water Resources Planning Act (79 Statute 244) provided for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of the Water Resources Council and river basin commissions, and by providing financial assistance to the States that will increase State participation in such planning.

2.157 Public Law 89-665, October 15, 1966 - The National Historic Preservation Act of 1966 (80 Statute 915), as amended by Public Law 96-515 (94 Statute 2987), established national policy for historic preservation, authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places, and created the Advisory Council on Historic Preservation. Section 101 of Public Law 89-665 authorized the Secretary of the Interior to grant funds to individual States for comprehensive statewide historic surveys. These surveys were to inventory historic, architectural, and archeological resources within the States. Many of the counties along the Mississippi River in Iowa, Minnesota, and Wisconsin have been surveyed by the State Historic Preservation Offices in the last decade. Section 106 specifies that Federal agencies, before approval of any expenditure or before issuance of any license, must consider the effect of the action on any property included in or eligible for the National Register of Historic Places and must afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on this action. Section 110 requires each Federal agency to establish a program to locate, inventory, and nominate all properties under the agency's ownership or control that appear to qualify for inclusion on the National Register.

2.158 Public Law 89-669, October 15, 1966 - The National Wildlife Refuge System Administration Act of 1966 (80 Statute 927), as amended, defines the National Wildlife Refuge System as including wildlife refuges, areas for the protection and conservation of fish and wildlife species that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas. The Secretary of the Interior is authorized to permit any use of an area, provided that such use is compatible with the major purposes for which such area was established. Any payments for rights-of-way through

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such areas go into the Migratory Bird Conservation Fund for the acquisition of additional lands. By regulation, up to 40 percent of an area acquired for a migratory bird sanctuary may be opened to migratory bird hunting unless the Secretary of the Interior finds that hunting any species of migratory game bird in more than 40 percent of such an area would be beneficial to the species. This act requires an Act of Congress for the divestiture of lands in the system, except (1) that lands acquired through the Migratory Bird Conservation Fund may be divested upon approval of the Migratory Bird Conservation Commission, and (2) that any lands can be removed from the system by lands exchange, or if brought into the system by a cooperative agreement, then these lands can be removed according to the terms of the agreement.

2.159 Public Law 91-190, January 1, 1970 - The National Environmental Policy Act (NEPA) of 1969 (83 Statute 852) declared a national environmental policy for protection and enhancement of the environment and established a Council on Environmental Quality (CEQ). NEPA set forth the requirement for an environmental impact statement on any major Federal action significantly affecting the quality of the human environment.

2.160 Public Law 96-95, October 31, 1979 - The Archaeological Resources Protection Act of 1979 (93 Statute 721) provides for excavation and removal of archeological resources on public or Indian lands, by qualified individuals with a permit from the Federal land manager. The act establishes criminal and civil penalties for persons engaged in illegal excavation, removal, or damage to archeological resources or in the sale, purchase, exchange, or transportation of illegally-removed resources. This act authorizes rewards for information that leads to conviction. It authorizes the forfeiture of archeological resources, equipment, and vehicles involved in a violation. It authorizes the Federal land manager to withhold disclosure of the location and nature of archeological resources. The act also provides for cooperation with private individuals having collections obtained before passage of this act.

2.161 Public Law 97-140, December 29, 1981 - Section 6 of this act allows lawful private uses and structures (such as boathouses, docks, and houseboats) to remain at Corps of Engineers water resource projects until December 31, 1989, if the structure or property is maintained in usable condition and if the use or

structure does not present a threat to property.

Other Federal Statutes

2.162 Public Law 59-206, June 8, 1906 - The Antiquities Act of 1906 (34 Statute 225) makes it a Federal offense to appropriate, excavate, destroy any historic ruin or monument located on owned or controlled by the Federal Government without permission from the Secretary of the Department of the Interior over those lands.

2.163 The River and Harbor Act of 1930, The River and Harbor Act of 1930 (46 Statute 1425) authorized the 9-foot navigation channel achieved by constructing a system of locks and dams supplemented by dredging. This act authorized the Secretary of the Army to acquire lands for a 9-foot channel project.

2.164 Public Law 74-942, August 2, 1935 - The Historic Sites Act of 1935 (49 Statute 668) declared a national policy to preserve cultural resources of national significance for public use, and certain powers to the Secretary of the Interior in regard.

2.165 Public Law 80-697, June 19, 1948 - The Anti-Drawdown Law of 1948 (62 Statute 1041) directs the Corps of Engineers to give priority to the needs of wildlife and their habitat dependent upon the Upper Mississippi River by maintaining pool levels as though no drawdowns were carried on throughout the year, to the extent possible.

2.166 Public Law 83-780, September 3, 1954 - Section 209 of the Flood Control Act of 1954 (68 Statute 1041) amends the Flood Control Act of 1944 and authorizes the Secretary of the Army to grant licenses and occupation of land and water under the jurisdiction of the Department of the Interior for flood control and recreation purposes.

2.167 Public Law 86-717, September 6, 1919 - The Flood Control Act of 1919 (41 Statute 817) requires that projects authorized and maintained to encourage adequate flood control and Forest management programs must be adopted to increase the value of project lands for



not present a threat to life and

wildlife and to promote natural ecological conditions by following accepted conservation practices.

2.168 House Committee on Public Works Resolution, December 11, 1969 - This resolution provides the Corps with the authority to study possible modifications to existing projects to promote their continued and successful operation.

2.169 Public Law 93-205, December 28, 1973 - The Endangered Species Act of 1973 (87 Statute 884), as amended, states the policy of Congress that all Federal departments and agencies must seek to conserve endangered and threatened species. Section 7 requires each Federal agency to consult with the Secretary of the Interior to insure that authorized actions neither jeopardize the continued existence of any endangered or threatened species nor result in adverse modification of critical habitat. Unless previously completed and included in the project environmental impact statement, a biological assessment must identify any endangered species that, in the opinion of the Fish and Wildlife Service, may be affected by the project. This requirement applies to all civil works studies, projects, or programs and includes the operation and maintenance of completed projects.

2.170 Public Law 94-587, October 22, 1976 - The Water Resources Development Act of 1976, Section 117, authorized funds to initiate the interagency Great River Environmental Action Team (GREAT) study:

"The Secretary of the Army, acting through the Chief of Engineers, is authorized to investigate and study, in cooperation with interested States and Federal agencies, through the Upper Mississippi River Basin Commission the development of a river system management plan in the format of the 'Great River Study' for the Mississippi River from the mouth of the Ohio River to the head of navigation at Minneapolis, incorporating total river resource requirements, including, but not limited to navigation, the effects of increased barge traffic, fish and wildlife, recreation, watershed management, and water quality at an estimated cost of \$9,100,000."

2.171 Public Law 95-217, December 27, 1977 - The Federal Water Pollution Control Act of 1977, also called the Clean Water Act of 1977 (91 Statute 1566), amends earlier acts to establish a more effective program of water pollution control by extending Federal authority

tutes

Law 59-206, June 8, 1906 - The Act of 1906 (34 Statute 225) makes it a crime to appropriate, excavate, injure, or destroy any historic ruin or monument located on lands owned by the Federal Government, without the approval of the Secretary of the Department having jurisdiction over those lands.

Harbor and Harbor Act of 1930, July 3, 1930 - The Harbor Act of 1930 (46 Statute 847) authorized the construction of a 9-foot navigation channel, to be constructed by constructing a system of locks and dams, and dredging. This act also authorized the Secretary of the Army to acquire land for the project.

Law 74-942, August 21, 1935 - The Act of 1935 (49 Statute 666) declares a national monument to preserve cultural properties of historic significance for public use, and it grants authority to the Secretary of Interior in this regard.

Law 80-697, June 19, 1948 - Section 5(a) of the Flood Control Law of 1948 (62 Statute 497) requires the Chief of Engineers to give full consideration to the needs of fish and wildlife in their habitat dependent upon the waters of the Mississippi River by operating and maintaining levees as though navigation were the primary purpose throughout the year, to the maximum extent practicable.

Law 83-780, September 3, 1954 - Section 1 of the Flood Control Act of 1954 (68 Statute 1256) amended the Flood Control Act of 1944 and authorizes the Secretary of the Army to grant licenses for use of land and water areas under the jurisdiction of the Department of the Army for park and recreational purposes.

Law 86-717, September 6, 1960 - This law requires that projects be developed and carried out to encourage adequate forest resources. All projects must be administered to the benefit of project lands for recreation and

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and increasing construction grant authority. Section 404(b) of the act requires an evaluation of dredged material disposal activities to insure compliance with the guidelines developed by the Administrator of the Environmental Protection Agency (EPA) and the Secretary of the Army. Section 404(t) authorizes any State to regulate, in accordance with its laws, the discharge of dredged material, in any portion of the navigable waters within the jurisdiction of the State, that results from maintenance dredging involving Corps of Engineers navigation projects.

2.172 Present State policies on dredged material disposal will serve as interim standards until the Corps and EPA develop applicable national standards. The States would then decide whether to adopt these national standards.

2.173 Section 30.12 of the Wisconsin Statutes totally prohibits open-water disposal of dredged material, including beach nourishment. All disposal in Wisconsin must be above the normal high-water mark. In addition, Section 147.025 of the Wisconsin Statutes requires a discharge permit for any discharge of dredged materials into State waters. To facilitate the implementation of recommendations of the interagency Great River Environmental Action Team (GREAT), the State of Wisconsin exempted the GREAT dredged material placement sites from State statutes. A memorandum of understanding between the Corps of Engineers and the Wisconsin Department of Natural Resources regulates use of the GREAT placement sites in accordance with this exemption.

2.174 At present, no Minnesota regulation specifically governs dredged material disposal; however, disposal below the ordinary high-water mark in State waters is not allowed without a permit. Minnesota also requires that any effluent generated from dredging operations must meet the standards and regulations described in Minnesota Statutes, Chapters 115 and 116, as amended. Effluents generated from disposal and dredging operations must be monitored for their impacts on water quality.

2.175 Iowa Statutes do not allow beach nourishment or open-water disposal without a State discharge permit. Although Iowa does not require a permit for discharge of effluent from a diked disposal facility, impacts of the effluent can be regulated by State water quality standards.

2.176 Public Law 95-502, October 21, 1978
Waterway Authorization Act (92 Statute)
a schedule for taxing fuel used in
transportation on inland waterways. Section
204 of this act established an Inland Waterway
Fund (in which fuel tax receipts are deposited)
and specify its use. Money in this fund is to be
for future construction and rehabilitation of locks
facilitate navigation. Section 101 states that
the Upper Mississippi River Basin Commission shall
prepare a comprehensive master plan for the
Mississippi River system. No replacement, repair,
or rehabilitation that expanded the capacity of
locks and dams or channels is to be undertaken
by the Secretary of the Army unless it is
approved the UMRBC master plan, except for
construction of a single 1200-foot long lock and
dam 26 and for necessary operation and
maintenance.

Executive Orders

2.177 Executive Order 11593, May 13
executive order requires the location, nomination to the National Register of t of all sites, buildings, districts, and a Federal agency's jurisdiction or conf must be exercised in the interim to as federally-owned properties that migh nomination are not inadvertently trans demolished, or substantially altered. P may be affected by Federal action or as be appropriately recorded prior to init Federal undertaking. These requireme incorporated into the amendments of Historic Preservation Act of 1966.

2.178 Executive Order 11988, May 24, 19
 cutive order places new emphasis on e
 aspects of floodplain management. It re
 agencies to recognize the significa
 floodplains and to consider the public
 would be realized from restoring an
 floodplains. This executive order requ
 of Engineers to provide leadership and t
 to avoid development in the base floodp
 is the only practical alternative, t
 hazards and risk associated with floods
 the impact of floods on human safety and
 to restore and preserve the natural a
 values of the base floodplain.



502, October 21, 1978 - The Inland Waterways Act (92 Statute 1693) provides for taxing fuel used in commercial inland waterways. Sections 203 and 204 established an Inland Waterways Trust Fund (tax receipts are to be deposited) for the construction and rehabilitation of inland waterways. Section 101 stipulated that the Upper Mississippi River Basin Commission (UMRBC) develop a comprehensive master plan for the Upper Mississippi River system. No replacement, construction, or expansion of the navigational locks and dams or channels was to be authorized by the Secretary of the Army until Congress approved the UMRBC master plan, except for the single 1200-foot long lock at locks for necessary operation and

Order 11593, May 13, 1971 - This order requires the location, inventory, and listing of National Register of Historic Places buildings, districts, and objects under Federal jurisdiction or control. Caution is required in the interim to assure that any properties that might qualify for listing are not inadvertently transferred, sold, or substantially altered. Properties that require Federal action or assistance shall be identified and recorded prior to initiation of the project. These requirements have been included in the amendments of the National Historic Preservation Act of 1966.

Order 11988, May 24, 1977 - This executive order places new emphasis on environmental protection in management. It requires Federal agencies to recognize the significant values of floodplains and consider the public benefits that result from restoring and preserving floodplains. The executive order requires the Corps of Engineers to provide leadership and to take action to protect floodplains in the base floodplain unless it is a practical alternative, to reduce the damage associated with floods, to minimize loss of life and property, and to serve the natural and beneficial floodplain.

Interagency Agreements

2.179 General Plans, March 9 - November 2, 1953, revised March 8, 1961 - General plans for the use of project lands for wildlife conservation and management were drawn up in accordance with the Fish and Wildlife Coordination Act of 1946 (Public Law 9-732). Through this agreement, the Secretary of the Army made certain project lands available to the Secretary of the Interior for wildlife conservation and management. The Secretary of the Interior may, in turn, make these lands available to the respective State conservation agencies for administration.

2.180 Cooperative Agreement, 14 February 1963 - Through the cooperative agreement between the Department of the Army and the Department of the Interior, Bureau of Sport Fisheries and Wildlife (now the Fish and Wildlife Service), certain Corps lands and waters in the 9-foot channel navigation project were made available to the Department of the Interior for conservation and wildlife management. The Department of the Army, however, retains the right to develop public use facilities, provide for timber management, and to issue leases, licenses, and easements for public use, and special use licenses for non-exclusive private uses. Under this agreement, every proposal to develop a public use area must be coordinated with the Fish and Wildlife Service, and the Corps must consider any adverse effect that a proposed development may have on the wildlife management program. The agreement stipulates that the FWS must submit an annual management program to the District Engineer.

2.181 Memorandum of Agreement, April 18, 1973 - A memorandum of agreement between the Corps of Engineers and the U.S. Coast Guard clarifies areas of jurisdiction and responsibilities under Federal statutes to regulate certain activities in navigable waters of the United States. The agreement covers alteration of bridges; construction, operation, and maintenance of bridges and causeways; closure of waterways and restriction of passage under bridges; and design of flood flows. This agreement also requires mutual coordination and consultation on projects and activities in or affecting navigable waters.

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2.182 Memorandum of Understanding, October 17, 1980 -
A memorandum of understanding documents the joint decision by the U.S. Fish and Wildlife Service, Region 3, and the Corps of Engineers, North Central Division, to place a moratorium on granting special use permits and licenses for new private recreational structures or associated actions on lands within the Upper Mississippi National Wildlife and Fish Refuge. The moratorium is an interim measure to be concluded with a joint plan for realizing the maximum practical public use potential of the refuge while protecting environmental quality and fish and management potential of refuge lands and waters.

Corps of Engineers Regulations

2.183 Engineer Regulation 1165-2-400, August 3, 1970 -
This regulation (Water Resource Policy and Authorities: Recreational Planning, Development, and Management Policies) defines objectives and policies governing planning, development, and management of outdoor recreational resources, plus enhancement of fish and wildlife at Corps water resource projects.

2.184 Engineer Regulation 1120-2-401, August 14, 1970-
This regulation (Investigation, Planning and Development of Water Resources: Preservation and Enhancement of Fish and Wildlife Resources) prescribes policies and procedures for considering the preservation and enhancement of fish and wildlife resources in the planning and development of Corps water resource projects.

2.185 Engineer Regulation 1120-2-404, August 14, 1970-
This regulation (Investigation, Planning and Development of Water Resources: Federal Participation in Recreational Development) provides guidance on Federal participation and non-Federal cooperation in the development of outdoor recreation and fish and wildlife enhancement at Corps water resource projects, plus guidance on the need and timing of assurances of non-Federal cooperation in such features.

2.186 Engineer Regulation 1130-2-400, May 28, 1971 -
This regulation (Project Operations: Recreation-Resource Management of Civil Works Water Resource Projects) provides policy and procedural guidance for administration and management of Corps civil works projects. It deals primarily with the administration of project lands and waters to assure a uniformly high quality of recreational services and environmental enhancement and preservation in the operation, maintenance, and administration of all projects.

2.187 Engineering Regulation 1174, Appendix E - The North statement on managing recreation identifies specific management private use on Corps-administered the North Central District. appendix E, paragraph 3(e), District Engineer has the responsibility the compatibility of existing with project purposes.

2.188 Engineer Regulation 11276 - This regulation (Investment Development of Water Resources Planning) prescribes policies and procedures to insure that protection of recreation resources are given other objectives in the planning Corps water resource projects.

2.189 Engineer Regulation 1105 - This regulation (Planning: Chapter 3: Historic Preservation) for consideration of historic works planning studies. It includes of historic preservation project statutes, executive orders, and agencies applicable to Corps of studies and preconstruction planning. This regulation does not apply to operation of Federal water development Corps is preparing regulation activities.

2.190 33 CFR Part 325, Appendix - This draft appendix (Procedures Cultural Resources) establishes with the National Historic Preservation. It implements regulations pertaining to cultural resources by work or structures authorized Army permits. These procedures properties that are listed on the for the National Register of would be affected by the permit.



Engineering Regulation 1130-2-406, December 13, 1981 - Appendix E - The North Central Division policy on managing recreational use (January, 1981) prescribes specific management procedures to deal with Corps-administered lands and waters in the North Central District. NCD supplement 1 to this regulation, paragraph 3(e), indicates that each Corps engineer has the responsibility to evaluate the compatibility of existing private recreation use with Corps purposes.

Engineering Regulation 1120-2-400, February 12, 1982 - This regulation (Investigation, Planning and Design of Water Resources: Recreation Resources) prescribes policies, guidelines, and procedures to insure that protection and enhancement of water resources are given equal treatment with other activities in the planning and development of water resource projects.

Engineering Regulation 1105-2-50, January 29, 1982 - This regulation (Planning: Environmental Resources, Historic Preservation) provides guidance for the coordination of historic preservation in civil engineering studies. It incorporates requirements for historic preservation policies embodied in executive orders, and rules of other Federal agencies applicable to Corps of Engineers feasibility studies. Preconstruction planning and engineering studies do not apply to the construction and design of Federal water development projects. The purpose of these regulations is to provide guidance in preparing regulations that apply to these

36 CFR Part 325, Appendix C, April 3, 1980 - This regulation (Procedures for the Protection of Cultural Resources) establishes procedures to comply with the National Historic Preservation Act of 1966. These regulations and executive orders protect cultural resources that may be affected by structures authorized by Department of the Interior. These procedures apply only to those structures that are listed on or determined eligible for the National Register of Historic Places that are affected by the permitted activity.

2.191 Engineering Regulation 1105-2-167, April 12, 1978 - This regulation (Planning Resource Use: Establishment of Objectives) provides policy and guidance on establishing resource use objectives for all Corps water resource projects.

RELATIONSHIP OF THE MASTER PLAN WITH OTHER STUDIES

2.192 Several other studies address components of this master plan. Among these are the Upper Mississippi National Wildlife and Fish Refuge master plan, the Twin Cities and main stem level B studies of the Upper Mississippi River Basin Commission, Minnesota-Wisconsin Boundary Area Commission studies, the Metropolitan River Corridors Study, and the GREAT I reports. Corps of Engineers studies include the Recreational Craft Locks Study and the environmental impact statement for the operation and maintenance of the 9-foot channel. Also, Public Law 95-502 (which authorized construction at locks and dam 26) required the Upper Mississippi River Basin Commission to prepare a master plan for management of the Upper Mississippi River system. Coordination of the St. Paul District master plan and these other studies has avoided duplication of efforts. Information from these other studies has been used for this report. Brief summaries of some of the other studies follow.

Upper Mississippi National Wildlife and Fish Refuge Master Plan

2.193 Approximately 95 percent of the Corps lands covered by this land use allocation plan have been managed by the U.S. Fish and Wildlife Service (FWS) for the conservation and maintenance of wildlife resources under a cooperative agreement with the Corps. To prevent disruptive jurisdictional disputes, these two agencies have worked together very closely on this land use allocation plan. The FWS and the Corps consider this plan an agreement on the best management of the Corps lands within the Upper Mississippi National Wildlife and Fish Refuge.

2.194 The Fish and Wildlife Service is writing a long-term management plan that will detail how the FWS intends to manage the Upper Mississippi National Wildlife and Fish Refuge to carry out the purposes of the allocations within the refuge. The final refuge and Corps master plans will set forth the duties, authorities, and relationships of the two agencies.

2. BACKGROUND INFORMATION

Level B Studies

2.195 Level B studies are cooperative efforts between various agencies that result in policy documents. Such studies provide information to decision-makers at all levels of government and to the general public on recommendations for various critical water and related land resource problems, opportunities, and needs. Level B studies focus on problems, needs, and issues requiring solutions within 15 to 25 years. These studies deal with the problems of flooding and interior drainage, recreational boating safety, the relationship between navigation and the environment, water quality, and land use management planning. Level B studies done by the Upper Mississippi River Basin Commission include the Main Stem Level B Study and Minneapolis-St. Paul Water and Land Future Perspectives and Plans.

Upper Mississippi River Basin Commission (UMRBC) Comprehensive Master Plan

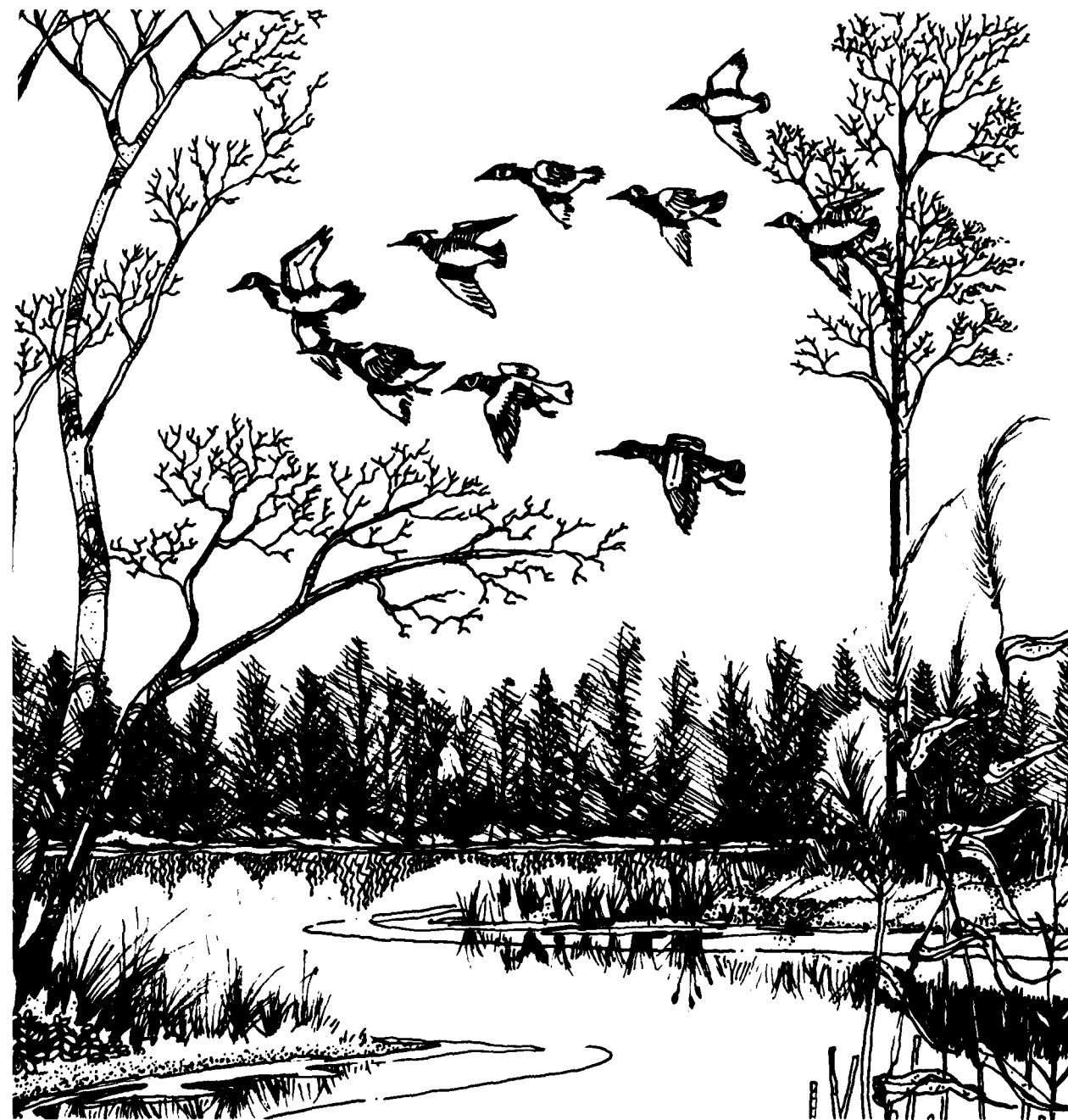
2.196 Through Public Law 95-502, Congress charged the UMRBC with developing a master plan for the Upper Mississippi River system. This plan is intended to guide management and development decisions, especially those concerning management of the navigation system (Upper Mississippi, Illinois, and Kaskaskia Rivers). The plan also addresses environmental quality and resource management policies and programs. The final plan was submitted to Congress on January 1, 1982. The successor to the UMRBC, the Upper Mississippi River Basin Association (UMRBA), which consists of State members and Federal observers, is primarily concerned with passage of legislation that would implement the UMRBC master plan recommendations.

Minnesota-Wisconsin Boundary Area Commission (MWBAC)

2.197 The MWBAC serves as a primary consultant and coordinator for the two State governments on matters concerning the Upper Mississippi and St. Croix River systems along the interstate border. The MWBAC uses aerial photography to monitor recreational use of the Lower St. Croix River. Other MWBAC studies include the Prescott Study, which examined traffic patterns at the confluence of the St. Croix and Mississippi Rivers, and the 1981 Riparian Landowners Recreation Studies.



FIGURE 2-5. The Mississippi River, the largest environment. Diverse habitat has made the corridor one of the greatest to recognize the importance of this ecological resource



St. Lawrence River, the largest environmental corridor in North America, has international significance as a major migration route for birds. This corridor is one of the greatest ecological communities on the North American Continent. Future management activities must continue to protect and enhance this ecological resource and work toward its preservation and enhancement.

2. BACKGROUND INFORMATION

Metropolitan River Corridors Studies

2.198 In 1980, the National Park Service (NPS) completed the Reconnaissance Survey: Twin Cities Metropolitan River Corridors. This study describes the river corridor resource, and it discusses trends and potential threats to this river resource as well as efforts taken to protect the resource. While the study makes no recommendations, the information it provides helps to determine whether the river corridor resource is of sufficient national significance to warrant a study of alternatives.

2.199 Title IX of Public Law 96-607 (December 28, 1980) established a committee (the Three River Corridors Study Committee) to study recreational use along the river corridors (Upper Mississippi, Minnesota, and Lower St. Croix) and to recommend policies that should be adopted to optimize the recreational, fish and wildlife, historic, and scenic values of the area. In accordance with Public Law 96-607, the committee will review studies, plans, programs, and policies of the Upper Mississippi River Basin Commission plus other governmental plans that affect recreational use of the river corridors.

2.200 The Corps participated in the Reconnaissance Survey, is represented on the Three River Corridors Study Committee, and will continue to review the metropolitan river corridors studies. However, because the NPS and the Three River Corridors Study Committee are examining recreation on the Twin Cities segments of the river corridors, the Corps sees little need to further study this portion of the study area and will rely on the studies of other agencies.

Great River Environmental Action Team (GREAT) I Reports

2.201 The Great River Environmental Action Team I recently completed the final GREAT I report. This report focuses on development of a river system management plan that reviews all major river resource requirements in the St. Paul District portion of the Upper Mississippi. Major components of the GREAT I study that have assisted in the preparation of this master plan include the channel maintenance plan, the recreation appendix, the fish and wildlife appendix, and the associated environmental impact statement.

2.202 The end result of the GREAT I recommendations advocating needed actions, further studies, or policy recommended 39 action items, 26 policy items, and 47 further study items. The recommendations concern recreational, historic, and cultural resources. Such recommendations will be implemented wholly or in part, through this master plan.

Recreation Craft Locks Study — Corps of Engineers

2.203 This study investigated the problem of recreational boaters in the 9-foot navigation study centered on the feasibility, a economic justification of providing a passage for recreational craft at locks.

Environmental Impact Statement-Operation and Maintenance of 9-foot Navigation Channel — COE

2.204 This report discusses the maintenance functions necessary to maintain channel depths for commercial navigation on the Mississippi River from the head of navigation at Minneapolis, Minnesota, to Guttenberg, Iowa, a distance of 24.5 miles. It also discusses the environmental setting of the project in terms of its physical, biological, and social aspects; and the environmental impacts of the project. It also discusses alternatives for the operation and maintenance program for the channel navigation project.

OPERATION AND MAINTENANCE PROGRAM

2.205 A major Corps of Engineers program is to provide the operation and maintenance activities to provide a 9-foot deep channel depth for navigation on the Upper Mississippi River from the head of navigation at Minneapolis, Minnesota, to Guttenberg, Iowa, a distance of 24.5 miles. This program also includes maintenance of a deep channel on 14.7 miles of the Mississippi River, 24.5 miles of the St. Croix River, and the Black River. St. Paul District is responsible for the operation and maintenance of 13 miles of the channel plus the channel dredging and disposal of material necessary to maintain a 9-foot navigation on these sections of the river.



ult of the GREAT I study was a set of advocating needed, implementable studies, or policy changes. GREAT I ction items, 26 policy funding items, r study items. Many of these concern recreational, environmental, ources. Such recommendations will be ly or in part, through completion of

Locks Study — Corps of Engineers

investigated the problems encountered boaters in the 9-foot channel. The n the feasibility, advisability, and ification of providing independent eational craft at locks and dams.

Fact Statement-Operation and Maintenance Channel — COE

ort discusses the operation and ctions necessary to provide 9-foot for commercial navigation on the er from the head of navigation at nnesota, to Guttenberg, Iowa. It vironmental setting of the project in sical, biological, and socioeconomic vironmental impacts of the project. ses alternatives to the existing maintenance program for the 9-foot on project.

MAINTENANCE PROGRAMS

ps of Engineers program consists of d maintenance activities necessary to deep channel depth for commercial e Upper Mississippi River from the ion at Minneapolis, Minnesota, to a, a distance of 243.6 river miles. o includes maintenance of a 9-foot 14.7 miles of the Minnesota River, e St. Croix River, and 1.4 miles of St. Paul District actions include d maintenance of 13 locks and dams l dredging and disposal of dredged ry to maintain a 9-foot depth for se sections of the river system.

2.206 Related Corps activities include snagging and clearing, erosion control and bank protection, small river and harbor improvements, and small flood control projects.

2.207 Public Law 96-515 authorized a St. Paul District cultural resources program to inventory and nominate properties under District ownership or control that appear to qualify for the National Register of Historic Places. This program is funded out of the District's annual operation and maintenance budget, as priorities dictate. An initial step, a literature search and records review of all known historic, architectural, and archeological properties, has been completed. Future studies include survey and assessment of newly recorded sites. The long-range program objective is development of a management plan to protect and preserve significant cultural resources that are on Corps of Engineers property or that are affected by Corps projects.

GENERAL REGULATORY PROGRAMS

2.208 Section 10 of the River and Harbor Act of 1899 (30 Statute 1151) requires a permit from the Corps of Engineers for placement of structures or work in navigable waters, for the discharge of dredged or fill material into navigable waters, or for the transportation of dredged material for the purpose of dumping into ocean waters. Construction of piers, wharfs, docks, and similar structures, and activities such as channel excavation, placement of riprap, groins, and mooring devices also require permits.

2.209 As a result of the 1972 amendments to Section 404 of the Federal Water Pollution Control Act (Clean Water Act), the regulatory authority of the Corps expanded to include responsibility for regulating the discharge of dredged or fill material in the waters of the United States. The purpose of the program is to insure that the chemical/biological integrity of the waters of the United States is protected from the irresponsible and unregulated discharge of dredged or fill material that could permanently destroy or alter the character of valuable resources.

2.210 The Corps evaluates each permit application to determine the benefits that reasonably may be expected from the proposal, as well as the reasonably foreseeable detriments. Permits also are coordinated with other governmental agencies, such as the Environmental

2. BACKGROUND INFORMATION

Protection Agency and the U.S. Fish and Wildlife Service. All factors relevant to the proposal are considered. These include conservation, economics, aesthetics, historic and archeological values, general environmental concerns, navigation, land use classifications, fish and wildlife, recreation, flood damage prevention, water supply, water quality, and, in general, the needs and welfare of the people. The Corps issues permits only if it determines that the project is in the overall public interest.

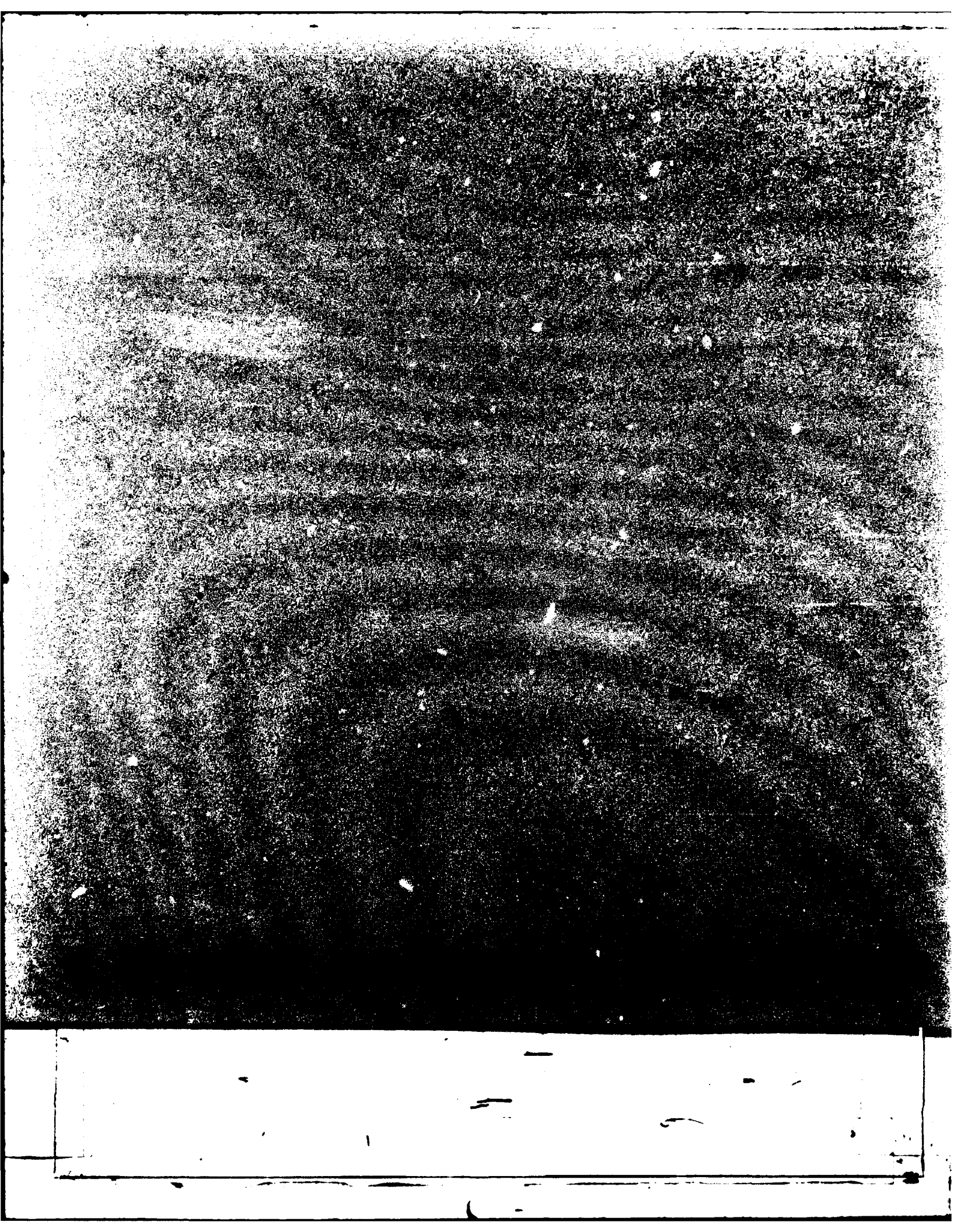
2.211 The St. Paul District exercises regulatory authority over Upper Mississippi River system waters within Minnesota and Wisconsin. Although the portions of pools 9 and 10 in Iowa are part of the St. Paul District, the Rock Island District handles all Corps of Engineers permits in the State of Iowa.

NATURAL RESOURCE MANAGEMENT PROGRAMS

2.212 The St. Paul District, Corps of Engineers, is responsible for management of all Upper Mississippi River system Corps recreation areas and other project lands within its District boundaries, except for areas of joint responsibility such as leased sites or refuge lands.

2.213 Management of Corps lands includes functions such as fire protection, safety, security, public protection, shoreline management, and real estate licensing. Five recreation areas on the Mississippi River or its backwaters are maintained and operated by the District (Sturgeon Lake Access, Blackhawk Park, Millstone Landing, Jay's Lake Landing, and Bad Axe Landing). In addition, the District provides observation platforms and other visitor facilities at most of its lock and dam sites.

2.214 Under a February 1966 cooperative agreement between the Departments of the Army and the Interior, most of the Corps-administered lands within the St. Paul District have been made available to the U.S. Fish and Wildlife Service for the conservation, maintenance, and management of wildlife resources. For purposes of management under this agreement, these lands are part of the Upper Mississippi National Wildlife and Fish Refuge. These refuge lands are below the mouth of Chippewa River, in pools 4 through 10. (Other lands in the Rock Island District of the Corps, in pools 11 through 14, are also part of this refuge.)



3. FACTORS INFLUENCING DEVELOPMENT

3.01 The following section describes a number of variables that influence the development and management of Upper Mississippi River resources. A review of these variables provides a general understanding of resource potentials and limitations that project planners evaluated for this study. As an extension of the background information in section 2.00, this section further identifies the complexity and diversity of resource conditions of the Upper Mississippi River and the challenge involved in developing objective management decisions.

RESOURCE USE OBJECTIVES

3.02 The following objectives/goals, which are listed in no order of significance, have guided the St. Paul District in formulating management alternatives and land use allocations. These objectives will also provide direction for long-range development plans (to be included in part III of this master plan).

- To maintain and enhance public recreational opportunities for all publics on an equal basis in accordance with recreation needs.
- To adjust management activity to respect resource capabilities in relation to multiple resource demands (including recreation, fish and wildlife, and navigation interests).
- To minimize user conflicts and to optimize public safety and access.
- To maximize Corps management actions for the greatest public benefit (such benefits may be categorized as economic, social, and/or environmental).
- To consider the implications of Corps planning and management activities on the Upper Mississippi National Wildlife and Fish Refuge. The objective of such consideration is to conserve and enhance river-related natural resources.

CLIMATE

3.03 The Upper Mississippi River Valley is an area of great temperature extremes. The lowest temperatures generally occur in January and February; the highest temperatures, in July and August. Summer highs can

reach 100°F, with winter lows doing temperature variation and season distinctly different recreational opportunities. A variety of recreational opportunities upon yearly temperature fluctuations. Season activities can extend from October, with the rest of the winter-oriented recreational activities shows average high and low temperatures, and associated recreational

GEOLOGY AND TOPOGRAPHY

3.04 The geologic characteristics of the Mississippi River have been determined by processes that began over 400 million years ago. At that time, material was deposited in a vast inland sea that covered the area. These were subsequently transformed into dolomite, shale, and sandstone several hundred million years ago, throughout central North America. The elevation, thus exposing the sea to erosion. As the land rose, the Mississippi River and its tributaries cut through the soft sedimentary rock to form today's complex drainage system. This is a very efficient drainage system because of the reason that relatively few natural barriers exist. The great number in adjacent areas of the Upper Mississippi below the head of Minneapolis.

3.05 Approximately one million years ago, of at least four periods of continental glaciation began. Apparently, the last three touched the major portion of the state. The bluffs and valleys surrounding the Mississippi River below Fort Snelling have been scoured and rounded by glacial ice. There are no significant upland deposits (sand, gravel, rocks), the area is a spectacular vistas, very different from the glaciated regions.

3.06 The Wisconsin glaciation (20,000 to 10,000 years ago) and the glacial influence on the formation of the Upper Mississippi River basin. During this period, drainage of glacial melt water to the east was blocked, resulting in



with winter lows down to -30°F . This variation and seasonal change create different recreational seasons which offer recreational opportunities. Depending on temperature fluctuations, the summer months can extend from early May into the rest of the year dominated by high and low temperatures, recreation associated recreational activities.

through the Mississippi River drainage system. These flows generally carried very small sediment loads compared to the size of the discharge, giving the water great capacity to erode. The Minnesota and Mississippi River Valleys, for example, were deepened and widened by glacial River Warren far beyond the apparent needs of their present discharges. As the glaciers retreated, drainage to the north and east reestablished. Then, as the volume and velocity of the melt water declined, river valleys were partially

TOPOGRAPHY

Geologic characteristics of the Upper Mississippi River have been determined by events that began over 400 million years ago. At that time material was deposited at the bottom of a sea that covered the area. These deposits were later transformed into alternating layers of shale, and sandstone. During the past 100 million years, the earth's crust in central North America rose to its present position, thus exposing the sedimentary rock to the land surface. The pre-Pleistocene river and its tributaries cut down through the sedimentary rock to form the basic pattern of the present drainage system. The development of this efficient drainage system is the major reason why relatively few natural lakes (compared to the number in adjacent areas) are near the Mississippi below the head of navigation in

approximately one million years ago, the first of our periods of continental glaciation. Recently, the last three glaciers scarcely covered a portion of the study area. Because the valleys surrounding the Upper Mississippi below Fort Snelling have not been recently covered by glacial ice and because there are no significant upland deposits of glacial drift (rocks), the area offers many species, very different from the nearby regions.

Recent glaciation is the most recent (10,000 years ago) and most important influence on the formation of the present Mississippi River basin. During much of this time, glacial melt waters to the north were blocked, resulting in tremendous flows

Temperature & Associated Recreational Activities

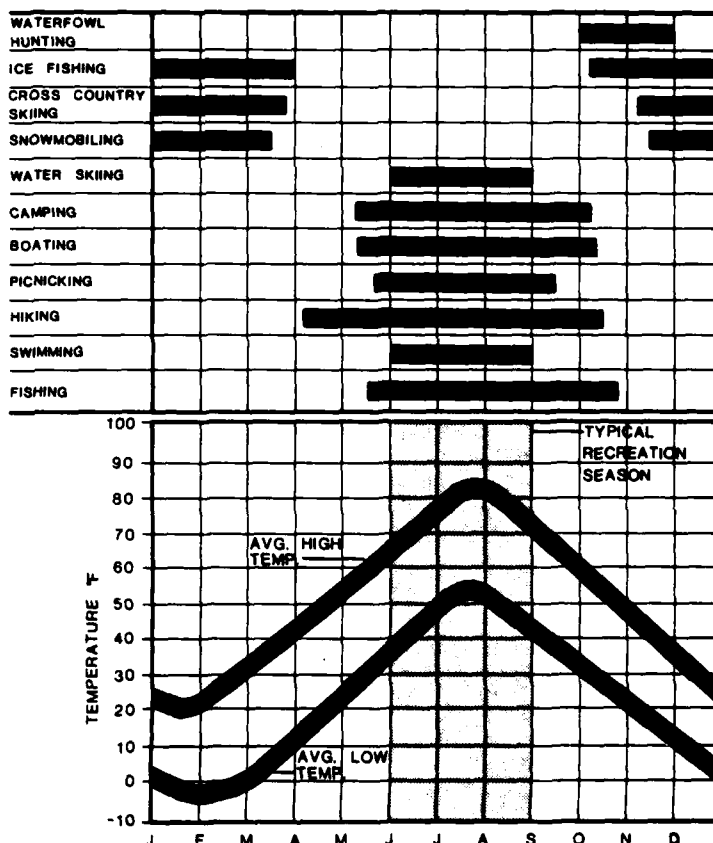


FIGURE 3-1. EXTREME TEMPERATURE VARIATION CREATES OPPORTUNITIES FOR A VARIETY OF RECREATION ACTIVITIES.

3. FACTORS INFLUENCING DEVELOPMENT

refilled by glacial outwash sediments consisting largely of sand and sandy gravel. Subsequent river action incised and greatly modified such outwashes, leaving a terraced valley with a gently meandering river and many side-channel formations. The reduced flow has also indirectly created lakes on the river system behind alluvial fans formed from material deposited in or along the Mississippi channel by tributary streams of great sediment-carrying capacity (Lake Pepin).

3.07 The natural geologic character of the study area makes it very attractive for recreation. The relative lack of large, natural, non-river lakes in the immediate vicinity leaves the river as one of the few navigable waters in the area. Consequently, the river attracts many boaters and fishermen. Additional attractions are the rugged and aesthetically pleasing bluffs and rock outcroppings along the river. These formations are in sharp contrast to the gently rolling glaciated topography of the surrounding regions. Lake Pepin and Lake St. Croix are two major naturally occurring areas on the river with large expanses of lake-like conditions.

3.08 Man-made structures built during the past 100 years, however, have greatly modified natural geologic conditions. The series of locks and dams created lakes, backwater areas, and wetlands in the pre-1930 floodplain along nearly the entire length of the study area. The wing dams constructed in the late 1800's and early 1900's, now covered by water, create both good fishing habitat and navigation hazards. Since the time that these areas were inundated, they have been subject to varying rates of sedimentation, caused and/or aggravated by disposal of material dredged for channel maintenance and by increased erosion in the upstream drainage area. If present sedimentation rates continue, much of the river valley eventually will lose most of its capacity to support fish and wildlife resources.

BIOLOGICAL RESOURCES

3.09 The Upper Mississippi River Valley supports one of the most diverse ecological communities in North America, in terms of abundance and variety of habitat

and species. The unusual plant and animal results from both geographical location and geographical variety. Because the valley is a transition region between the eastern forest and the prairie, species from both of these communities (major ecological community types) are present. Southern species also intrude up the valley in advantage of the climatic moderation. The relief from the floodplain to adjacent upland areas provides a diversity of local habitats.

3.10 Before construction of the locks and dams, the river bottoms were primarily wooded. There were some hay meadows and small farming operations. Sloughs were common, but hundreds of acres were also scattered through the wooded areas. Plants, dominated by river bulrushes, and the lakeshores and cuts leading off the river, the marshes often dried up completely. Flooding was a major activity, with crews rescuing property in bottom-land lakes and ponds after the water receded. The locks and dams converted acres of forest and meadow to aquatic areas. Species adapted to aquatic and wet areas flourished while forest and brushland diminished. Through ecological succession, brushlands, meadows, and marginal agricultural lands eventually returned to forest.

Vegetation

3.11 Most project lands within the floodplain have permanent normal pool levels are covered by lowland hardwood species in varying densities. Willow, cottonwood, maples, birch, and box elder are the prevalent species. Elm is a declining species, because of Dutch elm disease. Dominant overstory species in the wet forest type are silver maple, cottonwood, American elm, and river birch. The most common understory species are wood nettle, poison ivy, wild grape. Dominant overstory species in better-drained areas are American elm, silver maple, green ash, and black ash, in order of commonness. Common understory species are woodbine, touch-me-not, jack-in-the-pulpit, and violets. The temperate conditions in the basin



usual plant and animal life
ographical location and topo-
because the valley lies in the
een the eastern deciduous forest
ies from both of these biomes
(community types) are present.
intrude up the valley, taking
atic moderation. Topographical
lain to adjacent bluffs provides
abitats.

number of trees in the river valley extend well north
of their normal ranges. Major species in this group
are Kentucky coffeetree, honey locust, smooth buckeye,
river birch, and sycamore. Climbing vines (lianas)
are extremely important plants in these stands.
Poison ivy, woodbine, and wild grape are the most
common climbing vines, forming as much as 25 percent
of the canopy.

ion of the lock and dam system,
primarily wooded islands, with
small farming areas. Deep
but hundreds of lakes and ponds
through the wooded areas. Marsh
river bulrushes, were limited to
s leading off the sloughs. The
p completely. Fish rescue work
with crews rescuing fish trapped
s and ponds after the river
nd dams converted thousands of
meadow to aquatic habitats.
aquatic and wetland habitats
orest and brushland species
ecological succession, many
and marginal agricultural lands
forest.

3.12 The aquatic vegetation of the area is mostly
associated with backwaters and can be grouped into two
habitat types: deep and shallow marshes, and wood and
shrub swamps. Major species include willow, bulrush,
reed grass, water lily, arrowhead, duckweed, and coon-
tail. A minor vegetation species, wild celery, is of
great importance as food to the canvasback, redhead,
and other diving ducks. Increased turbidity is
causing wild celery to diminish.

3.13 Generally, minimally-vegetated areas and those
disturbed by human intervention are suitable for high-
density recreational activity or development.
Developed parks and dredged material disposal sites on
Corps land have this high-development potential.

nds within the floodplain above
levels are covered with many
cies in varying mixtures and
ottonwood, maple, elm, ash,
are the prevalent overstory
ining species, however, because
Dominant overstory species in
e silver maple, black willow,
m, and river birch, in order of
common understory species are
vy, wild grape, and woodbine.
ies in better-drained forests
er maple, green ash, basswood,
er of commonness. The most
es are woodbine, wood nettle,
he-pulpit, and violet. Because
itions in the bottom land, a

3.14 Vegetation areas with moderate capacity to
accommodate development or recreation activity are
generally areas that readily adjust to passive or low-
intensity recreation without major vegetative
disruption. Mature lowland forests above the ordinary
high-water level with adequate drainage are examples
of sites with a moderate development capacity.

3.15 Vegetation with a low capacity for recreational
development and activities is found in areas where any
significant activity might irreversibly damage that
vegetation. Lowland forest with poor drainage
capabilities and aquatic vegetation associated with
backwater areas are examples of such low-capability
class vegetation. Uncommon or significant plant
communities such as remnant native prairie would also
be classified as low-capability areas.

3. FACTORS INFLUENCING DEVELOPMENT

3.16 Detailed information on vegetation in the study area is provided in a report entitled Vegetation, Land and Water Surface Changes in the Upper Navigable Portion of the Mississippi River Basin Over the Period 1939-1973, by Kurt N. Olson and Merle P. Meyer, University of Minnesota, 1976.

Fish and Wildlife Resources

3.17 Fish - Approximately 123 species of fish live in the Upper Mississippi River. The lock and dam system created lake-type pools, with a current slower than that of the pre-impoundment river. Consequently, fast-water species decreased (such as the smallmouth bass) while species that prefer a pond-like environment increased (such as the largemouth bass, bluegills, crappies, carp, buffalo, and walleye). By slowing the current, the dams also increased silt deposition, thus reducing available habitat for species that require gravel beds to spawn and increasing habitat for species that tolerate mud bottoms.

3.18 Sedimentation has also filled some backwater sloughs to the point where fish may suffer winterkill because of oxygen depletion or freeze-out. Nevertheless, the river supports a very productive fishery, particularly below pool 3. In pools 4 through 6, the river has a conservatively estimated carrying capacity of at least 300 pounds of fish per acre.

3.19 Backwater sloughs, main channel border areas (especially the wing dams), and tailwater areas are the most important aquatic habitats for the production of aquatic invertebrates. Benthic organisms, particularly aquatic insects and freshwater mussels, are very abundant in the river system. Such animals are important forage items for many terrestrial and aquatic species.

3.20 Wildlife - The Upper Mississippi River corridor has one of the most diverse ecological communities, in terms of wildlife species abundance and variety, on the entire North American continent. The following wildlife species descriptions represent the extremely rich and diverse wildlife community of the Upper Mississippi River. This community has great inherent stability because of its present diversity.

3.21 Mammalian habitat in the area is primarily of extensive marshland, water areas, deciduous river bottom, sedge meadows, sand prairies, and steep slopes covered with a variety of hardwoods. Fifty-two species of mammals are found in the area. Aquatic mammals such as beaver, and upland mammals such as deer and squirrels are common. The area has many recreational values (such as hunting and wildlife observation).

3.22 The Upper Mississippi River corridor has deciduous forests of the east, the oak-hickory forests of the north, and the coniferous forests of the north. A large number of diverse habitats correspond to the bird species. This is indicated by the number of species. Nearly 300 species are known to nest here. About 100 species nest here. The area is important for birds, and non-game birds of the area. The public benefits including hunting, nature photography, scavenging, rodent pests, and general aesthetic value. Since many birds use the river corridor, the area has both national and international significance.

3.23 Endangered and Threatened - The study area falls within the range of several threatened and endangered species, including the peregrine falcon, and the mussel. The Higgins' eye mussel is found in the study area (primarily pools 9 and 10) in the river's side channel. The peregrine falcon is found in the study area but has been seen during migration from Canada to the Gulf Coast. The peregrine falcon is common in the area. It winters in the study area.

3.24 In addition to the federal list of threatened and endangered species, the States of Iowa, Minnesota, and Wisconsin have other plant and animal species threatened, or endangered. Not all are on Federal lands, but these species have scientific and aesthetic value from national standpoints. A concept has been made to preserve these species and



habitat in the river corridor consists of extensive marshlands and adjacent open deciduous river bottom forests, moist sand prairies, and limestone bluffs and covered with a mixture of cedar and yew. Two species of mammals are known in this area: aquatic mammals such as muskrats and beavers and mammals such as white-tailed deer are common. They provide both consumptive (such as hunting) and non-consumptive values (such as nature photography and recreation).

The Mississippi River is a blend of the characteristics of the east, the western prairies, the pine forests of the south, and the characteristics of the north. The area provides a variety of diverse habitats, each with its own bird species. The variety of bird life is shown by the number of species observed. Many species are known to frequent the area; many species nest here. The waterfowl, game birds and game mammals of the area provide various services including hunting, bird watching, photography, scavenging, control of insect and disease, and general aesthetic enhancement. Species using the river corridor are migratory and have both national and international significance.

Endangered and Threatened Species - The study area is within the range of three Federal endangered species: the bald eagle, the peregrine falcon, and the Higgins' eye pearly mussel. The Higgins' eye is found in various rocky pools 9 and 10 and the St. Croix River's side channels and main channel. The peregrine falcon is a rare visitor to the area, often seen during its migration from the Gulf Coast. The bald eagle is quite common. It winters, nests, and rears its young in the study area.

In addition to the federally-listed species, the Minnesota and Wisconsin list over 150 animal species as rare, uncommon, or endangered. Not all of them are found in the study area, but these species have significant aesthetic value from local, State, and Federal points of view. A concentrated effort must be made to protect these species and their habitats.

3.25 Refuges - Two extensive National Wildlife Refuges are in this portion of the Upper Mississippi. The Upper Mississippi National Wildlife and Fish Refuge, authorized in 1924, extends from Wabasha, Minnesota, mile 760, to Rock Island, Illinois, mile 490. The Trempealeau National Wildlife Refuge, established in 1936, was expanded to a total of 5,617 acres in 1979. This refuge lies within the Upper Mississippi River Valley in the extreme southern end of Buffalo and Trempealeau Counties bordering Perrot State Park in pool 6. The State of Minnesota leases 4,123 acres of land in pool 3 from the Corps for fish and wildlife management. This area is known as the Gores Wildlife Refuge. Other, smaller wildlife areas also exist along the river system.

3.26 Sources of Additional Information - Additional information on the terrestrial and aquatic life of the Mississippi River can be found in the following reports: the Environmental Impact Statement for the Operation and Maintenance of the 9-Foot Navigation Channel for the Upper Mississippi River, St. Paul District, 1974; A Compendium of Fishery Information on the Upper Mississippi River, the Upper Mississippi River Conservation Committee, 1979; the Fish and Wildlife Work Group Appendix to the GREAT I Study of the Upper Mississippi River, 1980; the Summary Report of the Fish and Wildlife Habitat Changes Resulting from the Construction of a Nine-Foot Channel in the Upper Mississippi River, 1978; the Upper Mississippi River Main Stem Level B Study by the Upper Mississippi River Basin Commission, 1981; and the Master Plan for the Upper Mississippi River, St. Paul District, 1965-1973. These reports provide more detailed information on species presence and abundance; on fish, wildlife, and vegetation changes over time; and on the importance and recreational value of these resources.

WATER QUALITY

3.27 The Upper Mississippi River has variable water quality. Municipal and industrial use of the river has caused pollution problems and deterioration of water quality in the St. Paul-Minneapolis area. In general, water quality improves at the confluence of the Mississippi and St. Croix Rivers (mile 811) as well as further downstream, below Lake Pepin (at about mile 787).

3. FACTORS INFLUENCING DEVELOPMENT

3.28 Minnesota River water quality is generally lower than that in the Mississippi because of riverbank erosion and land practices. These practices have resulted in high levels of turbidity and fecal coliforms. As a result, the Minnesota River is considered unsuitable for swimming. However, typical recreation uses of the river include pleasure boating and limited sport fishing.

3.29 Water quality of the Mississippi decreases at the confluence of the Mississippi and Minnesota Rivers because of the Minnesota's higher turbidity and coliform levels. Turbidity and suspended solids found in this segment of the river typically do not affect common non-contact recreational uses of the river such as recreational boating. However, high fecal coliform levels continue to make the river unsuitable for water-contact recreational uses such as swimming.

3.30 Water quality of the Mississippi River from pool 3 to upper pool 4 (downstream of Hastings, Minnesota, to the inlet of Lake Pepin) is relatively good for recreational uses such as boating and sightseeing. This stretch of the river is considered a recovery zone where water quality improves with increasing distance from the metropolitan area, particularly downstream of the confluence with the St. Croix River, which has higher water quality than the Mississippi itself. Water quality parameters generally meet standards for fisheries and recreation, with the exceptions of fecal coliform bacteria suspended solids, and PCB's.

3.31 The Lower St. Croix River includes a large river lake, Lake St. Croix (mouth to river mile 24.5). which has high water quality. The relatively undeveloped nature of the 7,650-square-mile St. Croix River drainage is an important factor in this lake's excellent water quality.

3.32 The water quality of the Mississippi River from pool 4 to pool 10 is relatively good for most recreational uses. Water quality in Lake Pepin is of sufficiently high quality that it does not limit swimming activity.

3.33 Major tributaries in this portion of the Upper Mississippi system, such as the Black River in pool 7 and the Root and La Crosse Rivers in pool 8, are similar in water quality to the Mississippi. The tributaries, particularly the Root and La Crosse, are

usually low in turbidity but, during high may contribute large quantities of silt to the Mississippi.

3.34 For more detailed water quality information please contact the following agencies:

- Minnesota Pollution Control Agency
- Wisconsin Department of Natural Resources
- Iowa Conservation Commission
- U.S. Environmental Protection Agency
- U.S. Geological Survey

POPULATION

3.35 Current and future populations within the area are critical factors influencing Federal

TABLE 3-

County	Pool(s)	1970 Census	C
Hennepin, MN	SAF, 1, MN R.	960.1	
Ramsey, MN	1, 2	476.3	
Dakota, MN	2, 3, MN R.	139.8	
Scott, MN	MN R.	32.4	
Washington, MN	2, 3, LSCR	83.0	
Pierce, WI	3, 4, LSCR	26.7	
St. Croix, WI	LSCR	34.4	
Goodhue, MN	3, 4	34.8	
Pepin, WI	4	7.3	
Wabasha, MN	4, 5	19.3	
Buffalo, WI	4, 5, 5A, 6	13.7	
Winona, MN	5, 5A, 6, 7	44.4	
Trempealeau, WI	6, 7	23.3	
La Crosse, WI	7, 8	80.5	
Houston, MN	8, 9	17.6	
Vernon, WI	8, 9	24.6	
Crawford, WI	9, 10	15.3	
Allamakee, IA	9, 10	15.0	
Clayton, IA	10, 11	20.6	
Grant, WI	10, 11	48.4	
Total		2,117.5	2

(1) Preliminary census data.

(2) Percent of total population in study area

(3) State Demographer data from Minnesota, W



ity but, during high discharge,
quantities of silt and clay to

ment of the Mississippi River system. Planners and
managers used the population data summarized in this
section to evaluate alternative actions.

led water quality information,
following agencies:

tion Control Agency

tment of Natural Resources

on Commission

tal Protection Agency

Survey

ure populations within the study
tors influencing Federal develop-

3.36 The study area comprises twenty counties along
the river in three States. These counties have a
total population exceeding 2.2 million (based on
preliminary 1980 census data). The total area
population is expected to increase by about 25 percent
between 1980 and 2000. Table 3-1 lists this
population by county and pool and details these
expected changes.

3.37 Populations of municipalities by pool are in
table 3-2.

3.38 The effects of this distribution and concen-
tration on resource management are discussed in the
System-wide Analysis section of this report.

TABLE 3-1 - POPULATION BY COUNTY (BY THOUSAND)

Pool(s)	1970 Census	1980 Census (1)	% of Total (2)	%change 1970-1980	1990 (3) projected	% change 1980-1990	2000 (3) projected	% change 1980-2000
1, MN R.	960.1	939.5	42.45	- 2.1	909.8	- 3.2	880.0	- 4.3
2	476.3	457.4	20.67	- 4.0	449.4	- 1.8	442.0	- 3.4
3, MN R.	139.8	194.3	8.78	+39.0	243.3	+25.2	293.3	+50.9
4	32.4	43.6	1.97	+34.4	51.6	+18.3	58.7	+34.6
5, LSCR	83.0	113.7	5.14	+37.0	138.6	+21.9	163.5	+43.8
6, LSCR	26.7	31.2	1.41	+17.1	35.5	+13.8	40.4	+29.5
7	34.4	43.2	1.95	+25.8	58.4	+35.2	73.8	+70.8
8	34.8	37.7	1.75	+11.3	43.2	+14.6	48.6	+28.9
9	7.3	7.5	0.34	+ 2.2	7.8	+ 4.0	8.2	+ 9.0
10	19.3	19.3	0.87	0	19.7	+ 2.1	20.1	+ 4.1
11, 5A, 6	13.7	14.1	0.64	+ 2.6	15.4	+ 9.2	16.1	+14.2
12A, 6, 7	44.4	46.2	2.09	+ 4.1	46.2	0	46.2	0
13	23.3	25.9	1.17	+11.0	28.1	+ 8.5	30.4	+17.4
14	80.5	89.6	4.05	+11.4	101.2	+12.9	111.0	+23.9
15	17.6	19.5	0.88	+10.8	19.7	+ 1.0	19.9	+ 2.0
16	24.6	25.3	1.15	+ 3.2	28.0	+10.7	26.1	+ 3.2
17	15.3	16.4	0.74	+ 7.7	17.6	+ 7.3	18.3	+11.6
18	15.0	15.1	0.68	+ 0.7	16.7	+10.6	17.5	+15.9
19	20.6	21.1	0.95	+ 2.4	23.2	+10.0	24.4	+15.6
20	48.4	51.4	2.32	+ 6.2	56.8	+10.5	60.4	+17.5
	2,117.5	2,213.0	100.00	+ 4.5	2,328.2	+ 5.2	2,398.9	+ 8.4

data.
population in study area in 1980.
data from Minnesota, Wisconsin, and Iowa.

3. FACTORS INFLUENCING DEVELOPMENT

TABLE 3-2. POPULATION OF MUNICIPALITIES
IN STUDY AREA

Pool/ Municipality	1980 Population(1)	Percent of population in pool	Percent of population in system
<u>Pool 1 & SAF</u>	<u>370,091</u>	<u>100.00</u>	<u>35.84</u>
Minneapolis, MN	370,091	100.00	
<u>Pool 2</u>	<u>339,446</u>	<u>100.00</u>	<u>32.87</u>
St. Paul, MN	268,248	79.03	
Mendota, MN	219	0.06	
Lilydale, MN	419	0.12	
Newport, MN	3,309	0.97	
Inver Grove Heights, MN	17,154	5.05	
St. Paul Park, MN	4,876	1.44	
Cottage Grove, MN	18,925	5.78	
Rosemount, MN	5,080	1.49	
South St. Paul, MN	21,216	6.25	
<u>Pool 3</u>	<u>15,494</u>	<u>100.00</u>	<u>1.50</u>
Hastings, MN	12,830	82.81	
Prescott, WI	2,664	17.19	
<u>Pool 4</u>	<u>22,270</u>	<u>100.00</u>	<u>2.16</u>
Red Wing, MN	13,721	61.61	
Bay City, WI	542	2.43	
Maiden Rock, WI	174	0.78	
Stockholm, WI	104	0.47	
Lake City, MN	4,518	20.29	
Pepin, WI	892	4.01	
Wabasha, MN	2,319	10.41	
<u>Pool 5</u>	<u>1,917</u>	<u>100.00</u>	<u>0.19</u>
Alma, WI	876	45.70	
Buffalo, WI	909	47.42	
Minneiska, MN	132	6.88	
<u>Pool 5A</u>	<u>1,238</u>	<u>100.00</u>	<u>0.12</u>
Fountain City, WI	973	78.59	
Minnesota City, MN	265	21.41	
<u>Pool 6</u>	<u>25,011</u>	<u>100.00</u>	<u>2.42</u>
Winona, MN	25,011	100.00	
<u>Pool 7</u>	<u>10,021</u>	<u>100.00</u>	<u>0.97</u>
Trempealeau, WI	954	9.52	
Dakota, MN	351	3.50	
Onalaska, WI	8,716	86.98	

(1) Preliminary 1980 census data.

TABLE 3-2. POPULATION OF MUN
IN STUDY AREA (C

Pool/ Municipality	1980 Population(1)	Per in
<u>Pool 8</u>	<u>53,223</u>	<u>10</u>
LaCrescent, MN	3,648	
La Crosse, WI	48,193	9
Brownsville, MN	418	
Stoddard, WI	691	
Genoa, WI	273	
<u>Pool 9</u>	<u>2,491</u>	<u>10</u>
New Albin, IA	608	24
DeSoto, WI	318	12
Lansing, IA	1,177	47
Ferryville, WI	214	8
Lynxville, WI	174	6
<u>Pool 10</u>	<u>10,356</u>	<u>100</u>
Harpers Ferry, IA	257	2
Prairie du Chien, WI	5,837	56
Marquette, IA	522	5
McGregor, IA	938	9
Clayton, IA	67	0
Bagley, WI	319	3
Guttenberg, IA	2,416	23
<u>Minnesota River</u>	<u>149,291</u>	<u>100</u>
Mendota Heights, MN	7,288	4
Eagan, MN	20,720	13
Burnsville, MN	35,681	23
Bloomington, MN	81,640	54
Savage, MN	3,962	2
<u>Lower St. Croix R.</u>	<u>31,651</u>	<u>100</u>
Afton, MN	2,539	8
St. Mary's Point, MN	347	1
Lake St. Croix Beach, MN	1,177	3
Lakeland Shores, MN	171	0
Lakeland, MN	1,814	5
Hudson, WI	5,427	17
North Hudson, WI	2,215	7
Bayport, MN	2,942	9
Stillwater, MN	12,255	38
Oak Park Heights, MN	2,764	8

Total population in system - 1,032,500

(1) Preliminary 1980 census data.



TABLE 3-2. POPULATION OF MUNICIPALITIES
IN STUDY AREA (CONT.)

City	1980 Population (1)	Percent of population in pool	Percent of population in system
	53,223	100.00	5.15
St. Paul, MN	3,648	6.85	
St. Louis, WI	48,193	90.55	
St. Louis, MN	418	0.79	
St. Louis, WI	691	1.30	
	273	0.51	
	2,491	100.00	0.24
St. Paul, IA	608	24.40	
St. Paul, WI	318	12.77	
St. Paul, IA	1,177	47.25	
St. Paul, WI	214	8.59	
St. Paul, WI	174	6.99	
	10,356	100.00	1.00
Ferry, IA	257	2.48	
St. Chien, WI	5,837	56.36	
St. Paul, IA	522	5.04	
St. Paul, IA	938	9.06	
St. Paul, IA	67	0.65	
St. Paul, WI	319	3.08	
St. Paul, IA	2,416	23.33	
St. Paul River	149,291	100.00	14.46
St. Paul Heights, MN	7,288	4.88	
St. Paul	20,720	13.88	
St. Paul, MN	35,681	23.90	
St. Paul, MN	81,640	54.69	
St. Paul, MN	3,962	2.65	
St. Paul Croix R.	31,651	100.00	3.07
St. Paul	2,539	8.02	
St. Paul Point, MN	347	1.10	
St. Paul Croix			
St. Paul, MN	1,177	3.72	
St. Paul Shores, MN	171	0.54	
St. Paul, MN	1,814	5.72	
St. Paul, WI	5,427	17.15	
St. Paul, WI	2,215	7.00	
St. Paul, MN	2,942	9.30	
St. Paul, MN	12,255	38.72	
St. Paul Heights, MN	2,764	8.73	
Population in system - 1,032,500			

Primary 1980 census data.

CULTURAL RESOURCES

3.39 The rich historical heritage fostered by the Mississippi River provides great potentials for public interpretation and enjoyment and for educational and scientific values. However, the many important cultural sites on Federal lands can also limit certain types of activities and/or facility developments. Therefore, the identification of cultural resources becomes an important influencing factor for all planning, development, and management actions.

3.40 According to recent studies conducted by the St. Paul District, approximately 2,200 known cultural properties are located along the Mississippi River from St. Anthony Falls to lock and dam 10. One-third of these are archeological sites and the remaining two-thirds are historic. These sites include only those listed in the literature and records of the various agencies, museums, and libraries that maintain such information.

3.41 Few intensive studies have been undertaken along the river, and, of these, most have been conducted within the last decade. Therefore, many areas along the river may have archeological and historic properties that have not yet been recorded. With intensive study, the number of known properties would probably increase dramatically.

3.42 The majority of the known historic sites along the Mississippi River are the buildings and structures in the river towns.

3.43 Identification of many of these structures has been the direct result of standing structure surveys undertaken by the State Historic Preservation Offices in Iowa, Minnesota, and Wisconsin. Historic structures form the bulk of those properties on the National Register of Historic Places.

3.44 Archeological resources that have been recorded within the past decade tend to be distributed in undeveloped areas that lie between communities. Archeological sites were once found throughout the river valley, but modern development tends to obscure or destroy these sites. Because the locations of many historic towns correspond closely to areas that were also inhabited prehistorically, a large number of undocumented sites or site remnants may exist. Many prehistoric sites were inundated in the 1930's as a result of the construction of the locks and dams.

3. FACTORS INFLUENCING DEVELOPMENT

3.45 Impacts upon these resources come from a variety of sources. Water fluctuation at the locks and dams and wave action resulting from commercial transportation wash many archeological sites into the river. People seeking recreation can further this erosion by adding to wave action and by beaching their craft on sites. Untrained amateurs, not recognizing the destructiveness of their actions, dig for artifacts. Some of these impacts are major and some seem insignificant; however, each destroys a portion of the data base and increases the difficulty of interpreting the archeological record.

3.46 The sites that form the cultural resource base of the study area are significant in resource use development because the Corps is responsible for the protection, preservation, and enhancement of cultural resources that are on its fee title land or that may be affected by its actions. Prior to construction of any new facilities on Corps fee title lands, cultural resource investigations will be conducted to locate and assess the significance of any cultural resources. These investigations are important because most sites leave no surface indication that can be detected easily after hundreds or thousands of years. A recent site-specific investigation of a proposed recreation area on Goose Island, Wisconsin, in pool 8, for example, was instrumental in determining the extent and future direction of development plans for the area.

OUTDOOR RECREATION TRENDS

3.47 The lack of reliable, useful data about public use and its effects on river resources is one of the greatest obstacles to both short- and long-term resource planning for the Upper Mississippi region. Because various government agencies exercise jurisdiction along the river, no comprehensive, continuing resource use monitoring program has been developed. A need for such a coordinated program has been identified, however, in several comprehensive river planning studies.

3.48 Lacking reliable historical data, projections of future public demands are questionable at best. When combined with the difficulties of obtaining an accurate list of the existing supply of recreation resources along the Upper Mississippi, the problems involved in preparing comprehensive recreation trend data multiply.

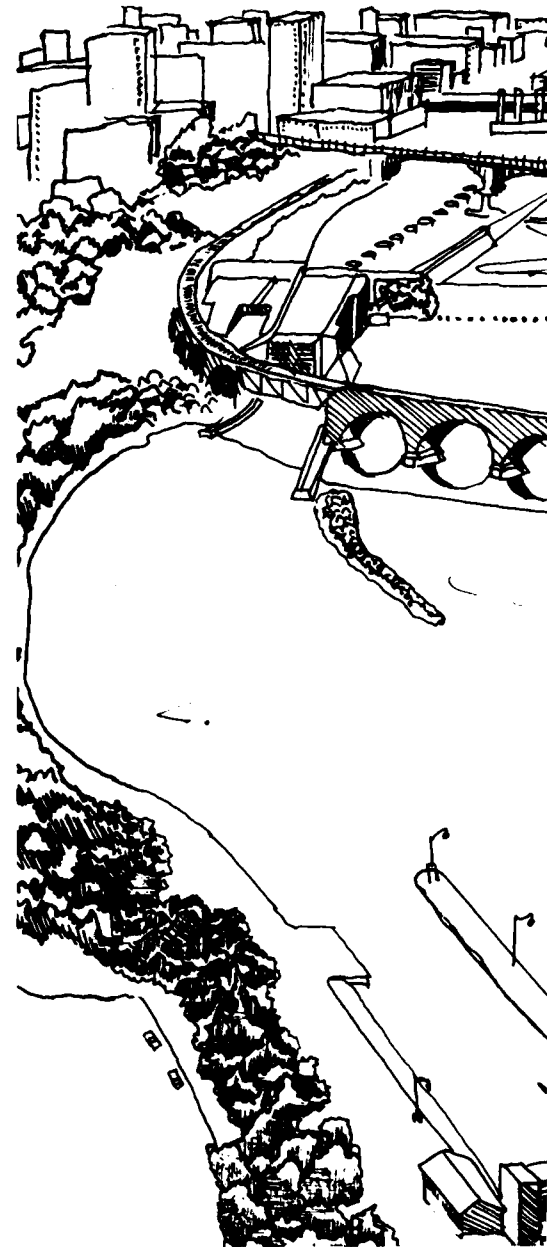
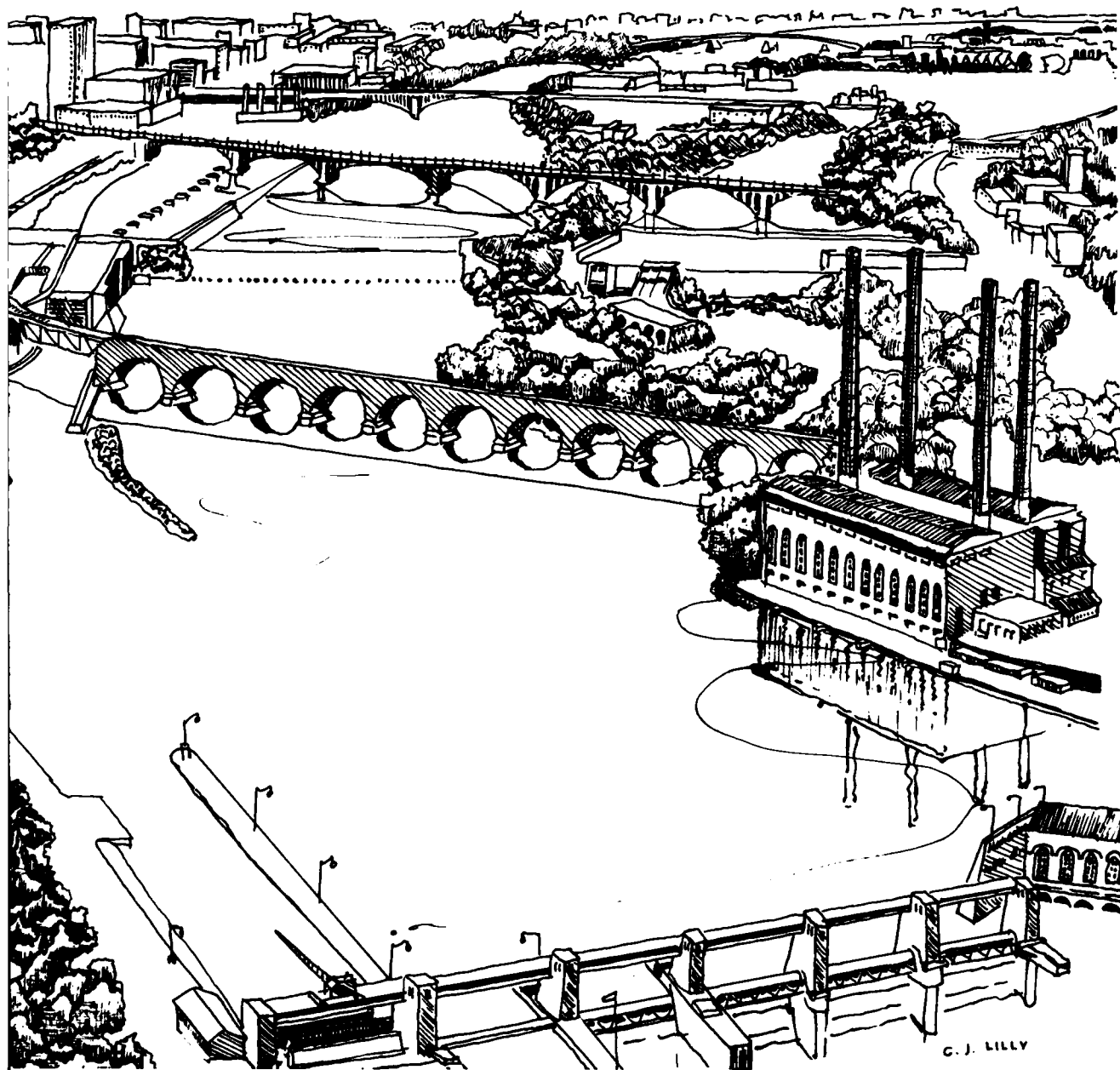


FIGURE 3-2. The upper reaches of the Mississippi River prehistoric times and have given rise to many significant structures that are significant to American prehistory. Along the river, the effect are many cultural resources along the river, the effect District (listed on the National Register of Historic Places) the river.



reaches of the Mississippi River have served as an important artery for travel, commerce, communication, and settlement since have given rise to many significant cultural resources along the shoreline. Cultural resources are those sites, buildings, objects, e significant to American pre-history and history in the areas of architecture, archaeology, engineering, and culture. Because there pances along the river, the effects of management activities on these resources must be considered. The St. Anthony Falls Historic e National Register of Historic Places) is one of many areas along the river that must be considered when developing plans and uses for

3. FACTORS INFLUENCING DEVELOPMENT

3.49 Various user profiles suggest that the river services a wide variety of recreationists - from hunters and trappers to waterskiers and hikers. Because Federal land ownership is generally limited to river bottom and shoreline border areas, most studies have not examined fully the many land-based, water-influenced land recreation uses such as hiking, cross-country skiing, nature photography, and bicycling.

3.50 In short, each of the studies analyzed in this section provides a limited view of some user groups. Such studies are restricted to a specific time and depict only a part of the overall, still-incomplete picture of public use on the Upper Mississippi River system. These studies provide the best available data, however.

Public-Use Visitation

3.51 Historical Trends - Table 3-3 shows the annual visitation recorded by the St. Paul District for the St. Anthony Falls pools through pool 10. Road counters, recreational lockage data, fish and wildlife bag checks, and camping and resort receipts were used as gross indicators for estimating visitation from 1965 to 1971. In 1971, the Recreation Resource Monitoring System (RRMS) was initiated. The RRMS is a system designed to collect and analyze annual information on recreational facilities and recreation resource management for each Corps project with an annual visitation of 5,000 recreation days or more. The RRMS is the only Corps-administered recreational use inventory for the Upper Mississippi River. Because the RRMS has undergone several revisions since 1971, comparing annual visitation from year to year is misleading. The RRMS data do, however, indicate a trend towards increased recreational use in the study area, which is recognized as an accurate trend.

3.52 Visitation figures for specific recreation sites will be covered in detail in part III (plan of development) of this master plan (to be published later).

Special User Studies

3.53 Recent studies of recreational use on the Upper Mississippi generally focus on specific user groups or use in specific areas. Brief summaries of several major studies follow.

TABLE 3-3 - ANNUAL PUBLIC USE VISITATION
IN RECREATION DAYS, POOLS
SAF-10, 1965-1980

Year	Recreation c
1965	1,710,000
1966	1,930,000
1967	2,030,000
1968	2,060,000
1969	2,110,000
1970	2,100,000
1971	2,130,000
1972	3,630,000
1973	3,493,200
1974	3,976,200
1975	4,081,700
1976	4,267,300
1977	4,103,000
1978	5,746,900
1979	7,907,100
1980	9,083,900
1981	8,474,000
1982	8,726,100

3.54 MRI - Midwest Research Institute (MRI) conducted a study for the Corps in 1977 entitled "A Study and Forecasts of Recreation Use and Lockages on the UMR." According to the study, nearly half of the recreational craft used on the UMR are runabouts, followed by cruisers and fishing boats account for little recreation through the locks. The survey also found that weekend trips are shorter and use fewer weekday trips and that these generally peak in the afternoon. Weekday recreational lockage use over the entire day and involves craft on the river that use many locks. Runabouts seem to exert the greatest pressure on the locks during afternoons on weekends, with weekend use 50 percent above weekday use. Lock use by houseboats, and fishing boats is more evenly distributed with no weekend peaking. Swimming is the most popular activity, then picnicking, canoeing, skiing, and fishing. Most people surveyed were so on the dredged material disposal problem that they traveled less than 50 miles to their starting point on the river.

3.55 GREAT I - The Dredged Material Inventory and Recreation User Survey was conducted for



3 - ANNUAL PUBLIC USE VISITATION,
IN RECREATION DAYS, POOLS
SAF-10, 1965-1980

Recreation days

1,710,000
1,930,000
2,030,000
2,060,000
2,110,000
2,100,000
2,130,000
3,630,000
3,493,200
3,976,200
4,081,700
4,267,300
4,103,000
5,746,900
7,907,100
9,083,900
8,474,000
8,726,100

Midwest Research Institute (MRI) conducted the Corps in 1977 entitled "Methodology of Recreation Use and Small Craft on the UMR." According to this survey, the recreational craft using the locks, followed by cruisers and houseboats, account for little recreation traffic on the locks. The survey also showed that these are shorter and use fewer locks than and that these generally occur during Weekday recreational lockage is spread over the day and involves craft on longer trips on the locks. Runabouts seem to exert the pressure on the locks during the mid-weekends, with weekend use about 10 times that of weekday use. Lock use by cruisers, and fishing boats is more balanced and does not peak. Swimming was the most popular activity, then picnicking, camping, water-skiing. Most people surveyed who camp do so on dredged material disposal islands or on the river. Over two-thirds of those surveyed travel more than 50 miles to their launching or on the river.

- The Dredged Material Disposal Site Survey was conducted for GREAT in the

summer of 1977. Based on this survey, a dredged material disposal island user profile was drawn and compared with data obtained from a similar study of Lower St. Croix River users.

3.56 The survey shows that the composite user of Upper Mississippi dredged material disposal islands travels 50 miles or less to be on the river with five other people. This group uses one powerboat 16 to 25 feet long. Typically, the island user owns the boat and does not rent marina space. Trips on the Upper Mississippi itself are generally overnight, last 3 days or more, and cost less than \$30. Islands are used more often than the shore for camping, or the user camps on the boat. Launching sites on the Upper Mississippi are chosen because they offer easy access or are close to home, to a favorite island, or to a favorite section of the river. A grocery store and/or restaurant and boat pumpout near the launch are desirable. Most island users stay within one pool and do not use the locks.

3.57 While the typical island user enjoys dredged material disposal islands and wishes to see more of them, he is not sure what sites actually are dredged material disposal islands (see the glossary). Users prefer islands that combine sand and trees, with a sand beach the most important criterion for selecting an island. The recreation experience generally sought is relaxation in natural areas requiring few outdoor skills, with no supervision or control of activities. Boating, camping, and fishing are the primary recreational activities. Typically, users prefer to be alone or with their own groups. However, each user is considered compatible with like users (e.g., runabout users are compatible with other runabout users), and with houseboats and canoes. Also, the composite user does not feel that barge tows reduce enjoyment of the river, although he thinks that recreation use of the river is as important as commercial use. About half of those surveyed on the Upper Mississippi proper perceived no crowding; another quarter mentioned feeling slightly crowded. Overall, users seem very satisfied with their river experiences.

3.58 The typical Lower St. Croix user surveyed seems as satisfied with his visit as is the Upper Mississippi user. This satisfaction level is not lowered by an increased perception of crowding. The typical Lower St. Croix user attempts to avoid crowds by picking a trip time when the fewest people are on the

3. FACTORS INFLUENCING DEVELOPMENT

river. He does not mind encountering other people while traveling along the river as much as when he is on shore, and he does not mind encountering a group of quiet people anywhere. Like the Upper Mississippi user, the Lower St. Croix River user prefers natural areas that require few outdoor skills and that have no controls on activities. The typical Lower St. Croix user, however, is receptive to restricting watercraft types and to limiting some areas of the river to specific uses, although he does not agree with limiting peak-use areas. In contrast to the Upper Mississippi, the St. Croix is predominantly a day-use area.

3.59 MNBAC Prescott Study - The Prescott Study was conducted in 1979 by the Minnesota-Wisconsin Boundary Area Commission (MNBAC). The purpose of the study was to determine the contribution of watercraft use levels on the Lower St. Croix made by craft originating in the Hastings-Prescott area of the Upper Mississippi. Study data showed that most of the recreation traffic coming down the Mississippi from the direction of lock and dam 2 as well as most of the recreation traffic coming up the Mississippi from the direction of lock and dam 3 has the Lower St. Croix River as its recreation destination. Watercraft with pool 4 as a recreation destination come mainly from the Lower St. Croix. Relatively little traffic that passes the confluence of the two rivers appears to have pool 2 as a recreation destination.

3.60 Like the MRI and dredged material disposal island surveys, this study indicated that the most common type of craft was the runabout. In the Prescott survey, fishing boats were dominant before 9:00 a.m., with runabouts (usually launched) dominant from 10:00 a.m. until dusk. Cruisers and houseboats (marina-based craft) account for nearly half of the traffic after 8:00 p.m. Launched boats are more likely to use the Lower St. Croix and to spend part of the day beached than are marina-based boats.

3.61 UMRCC Studies: Pools 5 and 9 - The Upper Mississippi River Conservation Committee (UMRCC) surveyed recreational use of pool 5 in 1978 and pool 9 in 1974-1975. In pool 5, sport fishing was the most popular activity, followed by pleasure boating and waterfowl hunting. Most recreationists surveyed were from Minnesota or Wisconsin, and more than half traveled less than 50 miles to the pool. Sport fishing was also the most popular activity in pool 9, followed by

sightseeing, boating, and camping. Most in the pool 9 survey were from Iowa or Wisconsin and traveled less than 50 miles to use the pool.

Demand - Supply - Needs Analysis

3.62 Demand, supply, and need are recreation terms. In short, demand is an estimate of possible participation; supply is a listing of facilities and areas available; and need is the supply falls short of meeting the demand (see the glossary for more detailed definitions).

3.63 An analysis of demand, supply, and need is an important factor in resource management (e.g., future expansion of a certain recreation facility can only be justified if there is a need for more of these facilities).

3.64 The following paragraphs briefly summarize the recognized sources of demand, supply, and need for different areas of concern associated with the foot navigation channel project.

3.65 Systemwide Demand-Supply-Needs Analysis Update - The GREAT I Recreation Work Group completed a demand-supply-needs analysis based on 1978 and projected activity occasions throughout the system by pool.

3.66 These demand estimates were based on Corps of Engineers annual RRMS visitation data. The accuracy of these estimates is questionable but are still the best available. One difficulty in interpreting the results of this type of analysis is the relative weighting of activity needs in different areas along the river. Information on recreation use, hiking, and hunting was based on State of Minnesota Outdoor Recreation Plan (SCORP) data, and demands for these activities are expressed in terms of regional demand rather than pool-specific demand. Further information on the methodology used in this data and its limitations is available in the GREAT I Report, Volume 6, Recreational Resources Appendix.

3.67 Corps Update - The St. Paul District completed the GREAT needs analysis using a revised inventory and new 1980 population census information from field personnel familiar



ing, and camping. Most respondents were from Iowa or Wisconsin; half h 50 miles to use the pool.

Needs Analysis

oly, and need are recreation planning; demand is an estimate of total pation; supply is a count of the reas available; and need is how far short of meeting the demand (see the detailed definitions).

s of demand, supply, and need is an in resource management decisions xpansion of a certain type of ity can only be justified by a need facilities).

ng paragraphs briefly summarize many s of demand, supply, and needs data as of concern associated with the 9-channel project.

Demand-Supply-Needs Analysis: GREAT I

T I Recreation Work Group conducted a ds analysis based on 1977 supply data ivity occasions through the year 2025

nd estimates were based in part on s annual RRMS visitation data. The estimates is questionable, but they best available. Of value in results of this type of analysis is hting of activity needs for different river. Information on snowmobiling, ng was based on State Comprehensive on Plan (SCORP) data, and project activities are expressed in terms of rather than pool-specific demand. on on the methodology used to develop s limitations is available in the Volume 6, Recreational Work Group

e - The St. Paul District has revised analysis using a revised supply w 1980 population census data plus field personnel familiar with the 9-

foot channel project and with recent changes in recreational use. This revision involved the same approach as the GREAT needs analysis. The revised needs analysis permits comparison from 1975 through 1981.

3.68 The following sections and table 3-4 show summary results by pool.

3.69 Pool 1 has a high need for hiking trails and a low need for boater parking spaces and launch lanes. The supply of picnic and camping facilities and swimming beach area should remain adequate through 2005.

3.70 Pool 2 has a need for snowmobiling trails and a high need for camping facilities and hiking trails. The need for snowmobile trails require further evaluation before any actions are taken to facilitate trail development. The need for launch lanes and parking spaces for boating is low. No need for additional picnic facilities or beach area is expected.

3.71 Pool 3 has the highest need in the system for picnic facilities, boater parking spaces, launch lanes, swimming beach area, camping facilities, and hiking trails. However, because the upper pool 3 and St. Croix River areas already receive heavy water-related recreational use, a site that would encourage additional users must be chosen carefully. The need for snowmobile trails also appears to be high, but again, this need requires further evaluation.

3.72 Pool 4 has a high need for boater parking spaces and launch lanes. This pool has a moderate need for swimming beach area and for hiking and snowmobile trails. The supply of camping facilities should remain adequate until 1995, when a low need will develop. No additional picnic facilities should be needed through 2005.

3.73 Pool 5 has a high need for picnic facilities and a low need for swimming beach area and hiking trails. This pool has the lowest need in the system for boater parking spaces, launch lanes, and snowmobile trails. The camping facility supply is expected to be adequate through 2005.

3.74 No need for additional picnic and camping facilities is expected in pool 5A through 2005. A moderate need exists in this pool for boater parking spaces, launch lanes, swimming beach area, and hiking trails. The need for snowmobile trails is low.

3. FACTORS INFLUENCING DEVELOPMENT

TABLE 3-4 - RELATIVE NEEDS FOR RECREATION FACILITIES, BY POOL, ACCORDING TO THE CORPS STUDY

Pool	Facility						
	Picnic Units	Boating parking	Launch lanes	Swim beach	Camp units	Hiking trails	Snow trails
1 and 2	1	4	4	1	1	6	6
3	-	4	4	-	6	6	7
4	7	7	7	7	7	7	6
5	1	6	6	5	2	5	5
5A	6	3	3	2	1	4	3
6	1	5	5	5	1	5	4
7	1	5	5	5	2	5	5
8	6	5	5	5	6	5	4
9	1	6	6	6	2	5	5
10	1	5	5	5	5	4	5
	1	5	5	6	1	3	5

Relative needs scale:

- = not applicable or data not available.
- 1 = adequate through 2005
- 2 = adequate through 1995
- 3 = has the lowest need.
- 4 = has a low need.
- 5 = has a moderate need.
- 6 = has a high need.
- 7 = has the highest need.

3.75 Pool 6 has a moderate need for boater parking spaces, launch lanes, swimming beach area, and hiking and snowmobile trails. The supply of camping facilities should remain adequate until 1995, when a low need will develop. The supply of picnic facilities should suffice through 2005.

3.76 Pool 7 has a high need for picnic and camping facilities. The need for boater parking spaces, launch lanes, swimming beach area, and hiking trails is moderate. Pool 7 also has a low need for snowmobile trails.

3.77 Pool 8 has a high need for boater parking spaces, launch lanes, and swimming beach area. The pool exhibits a moderate need for hiking and snowmobile trails. A need for additional camping facilities is not expected until 1995, when a low need will occur. There is no expected need for picnic facilities through 2005.

3.78 Pool 9 has a moderate need for boater parking spaces, launch lanes, swimming beach areas, camping facilities, and snowmobile trails. A low need for hiking trails exists in this pool. The supply of

picnic facilities should remain sufficient through 2005.

3.79 A high need for swimming beach area exists in pool 10. The need for boater parking spaces, launch lanes, and snowmobile trails is moderate. The need for hiking trails is the lowest in this pool. Pool 10 should have sufficient picnic facilities through 2005.

3.80 Statewide/Regional Demand-Supply

The State Comprehensive Outdoor Recreation Plan (SCORP's) represent a continuous planning process for outdoor recreational lands and facilities. SCORP's summarize State human and natural resources, analyze recreational supply, demand, and statewide and regional bases; present recommendations; and offer recommendations for State's recreational objectives. The SCORP is a policy document that acts as a management tool by all levels of government. Since the SCORP is a policy document, it provides for the provision of recreational opportunities through cooperation and coordination of all levels of government and private groups involved in providing recreational facilities necessary to meet the objectives of the SCORP. The Corps Engineering Regulation on Federal Lands in recreational development (ER 1100-2-1) states that "Planning for the recreational development will be accomplished . . . in a comprehensive Federal and State plan."

TABLE 3-5 - DEMAND, SUPPLY, AND PEAK DAY DEMAND, 1975 AND 1990, REGION 1,

Year	Activity	Peak day demand	Supply (1)
1975	Picnicking	5,194	5,707
1990	(units)	6,642	
1975	Boating	17,188	65,467
1990	(acres)	30,000	
1975	Camping	2,571	4,955
1990	(units)	4,079	
1975	Beach	5,122	22,600
1990	Swimming(3)	8,054	

(1) From 1978 Iowa SCORP.

(2) Assume constant at 1975 level.

(3) Beach unit (100 square feet).



ilities should remain sufficient through

gh need for swimming beach area exists in
he need for boater parking spaces, launch
snowmobile trails is moderate. The need
trails is the lowest in the system. Pool
have sufficient picnic and camping
through 2005.

Wide/Regional Demand-Supply-Needs Analyses -

Comprehensive Outdoor Recreation Plans represent a continuous planning process for recreational lands and facilities. Generally, summarize State human and natural resources; recreational supply, demand, and needs on and regional bases; present demand projected offer recommendations to achieve the recreational objectives. The SCORP is a document that acts as a management tool for use of government. Since the responsibility of recreational opportunities is shared, planning and coordination of all public agencies and groups involved in providing recreation is to meet the objectives of the SCORP. The Engineering Regulation on Federal participation in recreational development (ER 1120-2-404) states "The purpose of the recreational development... is to be accomplished... in coordination with State and Federal plans."

Table 3-5 - DEMAND, SUPPLY, NEED ANALYSIS, 1975 AND 1990, REGION 1, IOWA (1)

Activity	Peak day demand	Supply (2)	Excess supply(+) or demand(-)
Picnicking (sites)	5,194 6,642	5,707	+ 513 - 935
Fishing (res)	17,188 30,000	65,467	+48,279 +35,467
Camping (sites)	2,571 4,079	4,955	+ 2,384 + 876
Swimming (3)	5,122 8,054	22,600	+17,478 +14,546

1978 Iowa SCORP.

constant at 1975 level.
unit (100 square feet).

3.81 The 1978 Iowa SCORP divides that State into seven planning regions. The part of Iowa that is in the master plan study area (Allamakee and Clayton Counties) lies in Region 1. In addition to Allamakee and Clayton Counties, Region 1 includes 13 other counties. Outdoor recreation planning efforts must consider that the demand, supply, and needs analysis in the SCORP is regional (13 counties) and may not reflect actual local conditions (Allamakee and Clayton). Table 3-5 shows the supply, demand, and needs analysis for picnicking, boating, camping, and beach swimming. As this table shows, supply presently exceeds demand for these activities. Supply is expected to exceed demand through 1990 for boating, camping, and swimming. By 1990, however, a slight deficiency of picnic facilities is projected.

3.82 The master plan study area includes portions of two Minnesota development regions: Regions 10 and 11.

3.83 Region 10 covers Goodhue, Wabasha, Winona, and Houston Counties, plus seven other counties outside the study area. The 1979 Minnesota SCORP performed a demand and needs analysis. Table 3-6 shows the analysis for those activities which occur on the Upper Mississippi River system or adjacent lands. The SCORP recommends that increased hunting opportunities should be a primary objective of public agencies providing winter recreation and that the object of summer recreation planning should be more bicycling facilities. Other activities that show a high need for more facilities in this region are camping, hiking, and fishing.

3.84 Bicycling, snowmobiling, hiking, and skiing trails should be developed. Hunting, camping, fishing, and swimming opportunities should be increased. More access sites are needed.

3.85 Region 11, the Twin Cities metropolitan region, includes Hennepin, Ramsey, Washington, Dakota, and Scott Counties, which are adjacent to the Mississippi River, plus two other counties off the river. Table 3-7 shows the SCORP demand and needs analysis for certain activities in this region. The primary focus of public agencies involved in winter recreation should be providing cross-country ski trails. For agencies providing summer recreation, the main focus should be on bicycling trails. Additionally, Region 11 has a high need for more camping, fishing, and swimming opportunities.

3. FACTORS INFLUENCING DEVELOPMENT

3.86 Campground development is sparse in this region. Trails for skiing, bicycling, hiking, and snowmobiles are needed.

3.87 The 1979 Wisconsin SCORP divides the State into 15 planning regions, four containing portions of the master plan's study area: Regions 3, 4, 12, and 13.

3.88 Table 3-8 shows the SCORP's demand, supply, and need analysis for Region 3, which consists of Grant County plus three other counties not in the study area. The SCORP recommends an emphasis on the primary environmental corridors in the region: the Upper Mississippi and Wisconsin Rivers. It also recommends protecting the scenic amenities of the Mississippi, utilizing the river's recreation potential, and fully developing the Great River Road. The SCORP further proposed that Grant County and the Wisconsin Department of Natural Resources (DNR) establish a linear park along the bluffs of the Mississippi, featuring a hiking and nature study trail. The highest needs in Region 3 are more hiking and snowmobiling trails and hunting opportunities, with moderate needs for more primitive camping, canoeing, and fishing opportunities.

3.89 Region 4 consists of La Crosse, Vernon, and Crawford Counties plus one other county. Table 3-9 shows the demand, supply, and need analysis for this region. SCORP recommendations for Region 4 include developing hiking and bicycle trail facilities along the river. Particular emphasis should be given to the proposal to develop a bicycling facility between the city of La Crosse and Goose Island. A high need for more primitive campsites and fishing opportunities was also shown, as was a moderate need for more boat accesses, snowmobile trails, and canoeing and hunting opportunities.

3.90 Region 12 includes Buffalo and Trempealeau Counties plus one other county. Table 3-10 shows the demand, supply, and need analysis for this region. The SCORP recommends hiking and bicycle trail development along the river. Consideration of a regional park on Lake Pepin is also given high priority. Additionally, the region has a high need for canoeing opportunities, and a moderate need for primitive campsites and snowmobile trails.

3.91 Region 13 includes St. Croix, Pierce, and Pepin Counties in addition to two other counties. Table 3-11 shows the demand, supply, and needs analysis for

TABLE 3-6 - DEMAND AND NEEDS ANALYSIS, 1
REGION 10, MINNESOTA (1)

Activity	Year	Number of activity occasions	% of Region request recreation c
Winter camping	1978 1990	7,165 5,836	
Cross-country skiing	1978 1990	175,451 178,701	
Snowmobiling	1978 1990	1,135,806 1,203,203	
Winter fishing	1978 1990	172,210 182,594	
Trapping	1978 1990	66,317 63,795	
Recreational biking	1978 1990	5,106,773 5,289,960	2
Nature study	1978 1990	156,011 176,572	
Camping	1978 1990	359,761 402,485	(Supply: 105 1
Canoeing	1978 1990	111,416 101,899	
Summer fishing	1978 1990	679,262 742,482	1
Hiking	1978 1990	203,286 245,518	1
Swimming	1978 1990	2,054,016 2,105,989	(Supply: 32 45
Driving for pleasure	1978 1990	975,503 1,073,065	
Picnicking	1978 1990	752,405 838,823	(Supply:
Boating	1978 1990	433,240 453,781	(Supply:
Hunting	-	-	

(1) From 1979 Minnesota SCORP.



DEMAND AND NEEDS ANALYSIS, 1978 AND 1990
REGION 10, MINNESOTA (1)

Number of activity occasions
% of Region 10 population requesting more recreation opportunities

7,165 5,836	-
75,451 78,701	8.1
35,806 03,203	8.7
72,210 82,594	-
66,317 63,795	-
06,773 89,960	22.0
56,011 76,572	-
59,761 02,485	15.0 (Supply: 105 campgrounds)
11,416 01,899	3.5
79,262 42,482	12.2
03,286 45,518	11.0
54,016 05,989	7.5 (Supply: 32 beaches and 45 pools)
75,503 73,065	-
52,405 38,823	5.8 (Supply: 227 parks)
33,240 53,781	7.5 (Supply: 103 accesses)
-	9.9

Source: Minnesota Department of Natural Resources SCORP.

DEMAND AND NEEDS ANALYSIS, 1978 AND 1990
REGION 11, MINNESOTA (1)

Activity Year
Number of activity occasions
% of Region 11 population requesting more recreation opportunities

Winter camping	1978 1990	26,851 30,485	-
Cross-country skiing	1978 1990	2,415,352 2,752,792	11.9
Snowmobiling	1978 1990	2,299,074 2,464,659	6.3
Winter fishing	1978 1990	1,057,137 1,174,066	0.7
Trapping	1978 1990	61,599 52,314	0.2
Recreational biking	1978 1990	23,259,872 24,103,610	21.9
Nature study	1978 1990	820,983 958,381	0.1
Camping	1978 1990	371,209 415,369	16.0 (Supply: 78 campgrounds)
Canoeing	1978 1990	1,609,063 1,725,279	2.4
Summer fishing	1978 1990	2,004,513 2,915,021	11.4
Hiking	1978 1990	1,698,008 1,965,962	8.2
Swimming	1978 1990	10,295,066 11,196,472	10.3 (Supply: 131 beaches, 54 pools)
Driving for pleasure	1978 1990	2,540,402 2,866,956	-
Picnicking	1978 1990	2,917,732 3,378,575	5.3 (Supply: 1,125 parks)
Boating	1978 1990	3,389,063 3,736,007	5.3 (Supply: 233 accesses)
Hunting	-	-	8.5

(1) From 1979 Minnesota SCORP.

3. FACTORS INFLUENCING DEVELOPMENT

Region 13. Region 13 should also give consideration of a regional park on Lake Pepin a high priority. This region has a high need for hiking and bicycle facilities and for canoeing opportunities, plus a moderate need for primitive campsites, snowmobile trails, and hunting opportunities.

TABLE 3-8 - DEM

Activity	Year	
Swimming	1975	34,200
	1995	40,700
Developed camping	1975	
	1995	
Primitive camping	1975	
	1995	
Picnicking	1975	
	1995	
Motor boating	1975	7,100
	1995	8,500
Canoeing	1975	4,000
	1995	4,700
Fishing	1975	11
	1995	14
Hiking trails	1975	2
	1995	2
Bicycling trails	1975	
	1995	
Snowmobiling trails	1975	3
	1995	4
Hunting	1975	412,100
	1995	479,100

TABLE 3-9 - DEM

Activity	Year	
Swimming	1975	10,600
	1995	12,300
Developed camping	1975	1
	1995	2
Primitive camping	1975	
	1995	
Picnicking	1975	2
	1995	3
Motor boating	1975	7,100
	1995	8,300
Canoeing	1975	1,400
	1995	1,600
Fishing	1975	9
	1995	10
Hiking trails	1975	
	1995	
Bicycling trails	1975	1
	1995	2
Snowmobiling trails	1975	2
	1995	3
Hunting	1975	362,300
	1995	410,000

(1) From 1977 Wisconsin SCORP.



TABLE 3-8 - DEMAND, SUPPLY, NEED ANALYSIS, 1975 AND 1995, REGION 3, WISCONSIN (1)

Year	Demand	Supply (2)	Need
1975	34,200 activity occasions	50,332 activity occasions	--
1995	40,700 activity occasions	(39,690 beach; 10,642 pool)	--
1975	5,200 sites	3,698 sites	1,502 sites
1995	6,175 sites		2,477 sites
1975	155 sites	68 sites	87 sites
1995	188 sites		120 sites
1975	5,367 tables	4,311 tables	1,056 tables
1995	6,300 tables		1,989 tables
1975	7,100 occasions; 109 accesses	34,689 acres surface water	35 access sites
1995	8,500 occasions; 125 accesses	74 developed accesses	51 access sites
1975	4,000 occasions; 22 accesses	13 access sites	9 access sites
1995	4,700 occasions		
1975	11,800 occasions	2,966 miles streams and 9,480	
1995	14,000 occasions	acres lakes suitable for fishing	
1975	221.9 miles	23.0 miles	198.9 miles
1995	259.1 miles		236.1 miles
1975	33.2 miles	27.0 miles	6.2 miles
1995	64.3 miles		37.3 miles
1975	396.2 miles	122.8 miles	273.4 miles
1995	458.3 miles		355.5 miles
1975	412,100 annual occasions	50,272 acres open to hunting	
1995	479,100 annual occasions		

TABLE 3-9 - DEMAND, SUPPLY, NEED ANALYSIS, 1975 AND 1995, REGION 4, WISCONSIN (1)

Year	Demand	Supply (2)	Need
1975	10,600 activity occasions	16,500 activity occasions	--
1995	12,300 activity occasions	(8,875 beach; 7,625 pool)	--
1975	1,900 sites	1,892 sites	8 sites
1995	2,225 sites		333 sites
1975	158 sites	25 sites	133 sites
1995	183 sites		158 sites
1975	2,600 tables	1,989 tables	611 tables
1995	3,000 tables		1,011 tables
1975	7,100 occasions; 104 accesses	63,545 acres surface water	46 access sites
1995	8,300 occasions; 122 accesses	58 developed accesses	64 access sites
1975	1,400 occasions; 13 accesses	5 access sites	8 access sites
1995	1,600 occasions		
1975	9,300 occasions	1,355 miles streams and 4,390	
1995	10,800 occasions	acres lakes suitable for fishing	
1975	52.9 miles	28.0 miles	24.9 miles
1995	65.3 miles		37.3 miles
1975	109.6 miles	35.0 miles	74.6 miles
1995	215.2 miles		180.2 miles
1975	294.4 miles	95.5 miles	198.9 miles
1995	337.8 miles		242.3 miles
1975	362,300 annual occasions	81,912 acres open to hunting	
1995	410,000 annual occasions		

3. FACTORS INFLUENCING DEVELOPMENT

TABLE 3-10 - DEMAND

Activity	Year	D
Swimming	1975	6,900 act
	1995	8,000 act
Developed	1975	900
camping	1995	1,050
Primitive	1975	25
camping	1995	40
Picnicking	1975	1,017
	1995	1,150
Motor	1975	3,100 occasi
boating	1995	3,500 occasi
Canoeing	1975	400 occasi
	1995	400 occasi
Fishing	1975	2,800
	1995	3,200
Hiking	1975	84.8
trails	1995	97.2
Bicycling	1975	28.8
trails	1995	53.7
Snowmobiling	1975	246.5
trails	1995	271.4
Hunting	1975	121,100 ann
	1995	134,700 ann

TABLE 3-11 - DEMAND

Activity	Year	D
Swimming	1975	38,300 act
	1995	48,200 act
Developed	1975	2,475
camping	1995	3,150
Primitive	1975	173
camping	1995	220
Picnicking	1975	4,067
	1995	5,400
Motor	1975	17,900 occasi
boating	1995	22,600 occasi
Canoeing	1975	5,600 occasi
	1995	7,000 occasi
Fishing	1975	26,600
	1995	33,200
Hiking	1975	123.7
trails	1995	160.9
Bicycling	1975	107.2
trails	1995	231.8
Snowmobiling	1975	1,071.8
trails	1995	1,450.9
Hunting	1975	433,500 ann
	1995	603,800 ann

(1) From 1977 Wisconsin SCORP.



TABLE 3-10 - DEMAND, SUPPLY, NEED ANALYSIS, 1975 AND 1995, REGION 12, WISCONSIN (1)

Demand	Supply (2)	Need
6,900 activity occasions	21,695 activity occasions	--
8,000 activity occasions	(17,713 beach; 3,982 pool)	--
900 sites	1,019 sites	--
1,050 sites		31 sites
25 sites	13 sites	12 sites
40 sites		27 sites
1,017 tables	947 tables	70 tables
1,150 tables		203 tables
3,100 occasions; 46 accesses	26,674 acres surface water	14 access sites
3,500 occasions; 51 accesses	32 developed accesses	19 access sites
400 occasions; 12 accesses	2 access sites	10 access sites
400 occasions; 12 accesses		10 access sites
2,800 occasions	1,427 miles streams and 3,723	
3,200 occasions	acres lakes suitable for fishing	
84.8 miles	47.5 miles	37.3 miles
97.2 miles		49.7 miles
28.8 miles	4.0 miles	24.8 miles
53.7 miles		49.7 miles
246.5 miles	109.8 miles	136.7 miles
271.4 miles		161.6 miles
121,100 annual occasions	207,956 acres open to hunting	
134,700 annual occasions		

TABLE 3-11 - DEMAND, SUPPLY, NEED ANALYSIS, 1975 AND 1995, REGION 13, WISCONSIN (1)

Demand	Supply (2)	Need
38,300 activity occasions	41,378 activity occasions	--
48,200 activity occasions	(37,341 beach; 4,037 pool)	6,822 occasions
2,475 sites	2,934 sites	--
3,150 sites		216 sites
173 sites	99 sites	74 sites
220 sites		121 sites
4,067 tables	2,721 tables	1,346 tables
5,400 tables		2,676 tables
17,900 occasions; 263 accesses	64,909 acres surface water	86 access sites
22,600 occasions; 332 accesses	177 developed accesses	155 access sites
5,600 occasions; 26 accesses	7 access sites	19 access sites
7,000 occasions		
26,600 occasions	1,655 miles streams and 48,252	
33,200 occasions	acres lakes suitable for fishing	
123.7 miles	18.0 miles	105.7 miles
160.9 miles		142.9 miles
107.2 miles	14.0 miles	93.2 miles
231.5 miles		217.5 miles
1,071.8 miles	407.0 miles	664.8 miles
1,450.9 miles		1,043.9 miles
433,500 annual occasions	77,550 acres open to hunting	
603,800 annual occasions		

n SCORP. (2) Assume constant at 1975 level.

3. FACTORS INFLUENCING DEVELOPMENT

AESTHETIC RESOURCES

3.92 The Upper Mississippi River is a nationally-significant resource. Natural features, historical and archeological sites, and wildlife habitat together with recreational use and commercial interests form a complex and visually-sensitive environment. Consequently, any action that may affect visual quality must be evaluated carefully. A systematic evaluation

process is needed to analyze development and management in Mississippi.

Landscape Zones

3.93 As part of this master plan developed to analyze the visual quality of the area.⁽¹⁾ This analysis identifies

DOMINANT LANDSCAPE ZONE CHARACTERISTICS

Zone Location			Mpls. - CBD	Mpls. - Lower Gorge	Fort Snelling	St. Paul - CBD	South St. Paul	Grey Cloud Is.	Spring Lake	Hastings	Prescott	Prairie Island	Red Wing	Lake Pepin	Wabasha	Buffalo City	Winona
Zone Number			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LAND USE	1	Urban/Industrial	●			●	●										
	2	Urban/Residential		●						●							
	3	Urban/Agricultural											●				
	5	Urban/Natural			●												●
	6	Agricultural/Industrial						●									
	8	Agricultural							●								
	9	Agricultural/Natural										●			●	●	
	10	Natural									●			●			
	10	Channel	●	●		●	●			●							
	7	Island/River			●			●				●					●
RIVER ZONES	4	Marsh/River									●		●		●		
	1	Open Water							●					●		●	
VIEWING ANGLE	1	Above	●	●	●	●			●	●	●	●					
	5	Mid-level					●							●	●	●	
	10	Low						●					●				●
RIVER AWARENESS	10	High	●	●	●					●				●			
	5	Moderate													●	●	
	1	Low				●	●	●	●		●	●	●				●
LANDFORM CONTAINMENT	10	High		●	●	●				●							
	5	Moderate	●				●							●			
	1	Low						●	●		●	●	●		●	●	●
Total Score			27	33	33	23	22	25	12	33	17	19	19	31	24	21	24

TABLE 3-12. PROCESS DIAGRAM

t of this master plan, a process was
analyze the visual character of the study
is analysis identified 23 dominant land-

3.94 The existing landscape character was determined by using five categories to describe the dominant impressions within the study area:

- Dominant land use, e.g., urban, natural, agricultural.
- River zones or water characteristics - how observers perceive the types of water environments in each pool, i.e., open water, marsh/river, and island/river.
- Predominant viewing angle - where the majority of observers would see the river valley, i.e., above, mid-level, or low. An above viewing angle is from the upper portion of the bluff edge. A low viewing angle is considered to be near the river's water level.
- River awareness - whether observers can perceive the river or the river valley.
- Landform containment - whether a feeling of visual or physical containment pervades the landscape. The perception of containment is generally produced by the presence of bluffs along the river valley.

3.95 As the dominant impressions change, zone boundaries can be drawn and different category rankings can be assigned. More than one definition for each category may be possible. Each category is meant to represent one of the dominant impressions of a zone; however, it does not represent potential

(1) This study was conducted under contract for the Corps of Engineers by InterDesign, Inc. The study report, Visual Resource Evaluation Methodology for the Mississippi River, March 1982, is on file in the St. Paul District office.

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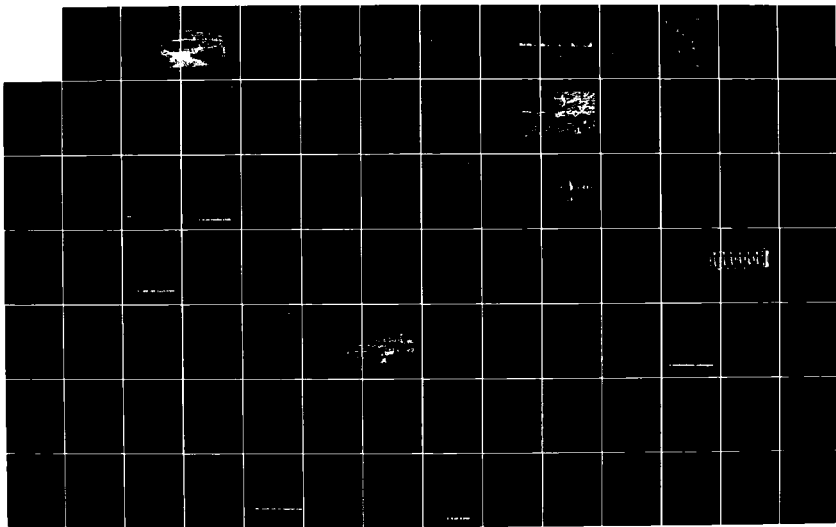
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PLAN FOR PUBLIC U. (U) CORPS OF ENGINEERS ST PAUL MN ST
PAUL DISTRICT SEP 83

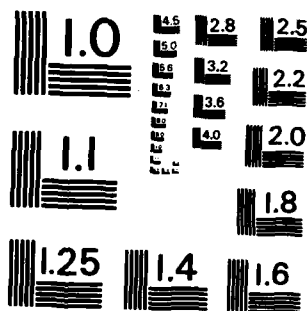
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

3. FACTORS INFLUENCING DEVELOPMENT

impressions. If potential impressions were considered, zones would be virtually impossible to establish.

3.96 For this study area, it was assumed that the more natural a zone, the higher the score for that particular zone in the land use category. The reasoning behind this assumption is that a natural area is highly sensitive to modification, and in this study area a natural area is generally considered of greater value or interest. Conversely, an urban/industrial area could readily accept further cultural modifications with little or no additional negative visual impacts.

3.97 A channelized river corridor with dramatic bluffs on both sides is considered to have the highest visual quality. Such corridors are generally narrow, and modifications could be visible on either side. Open water zones are wide expanses where modifications would generally occur in the background and not be readily perceived.

3.98 A low viewing angle assumes an intimacy with a scene in a riverine environment. Because close visual contact with a scene exposes modifications to a high degree, areas with low viewing angles are sensitive to development.

3.99 River awareness is similar to river zones. It is assumed that, if river awareness is high, the observation location is close to the riverbank and in the river valley. The focus of the view from such a vantage point is the river. Modifications to this scene would generally distract from visual quality.

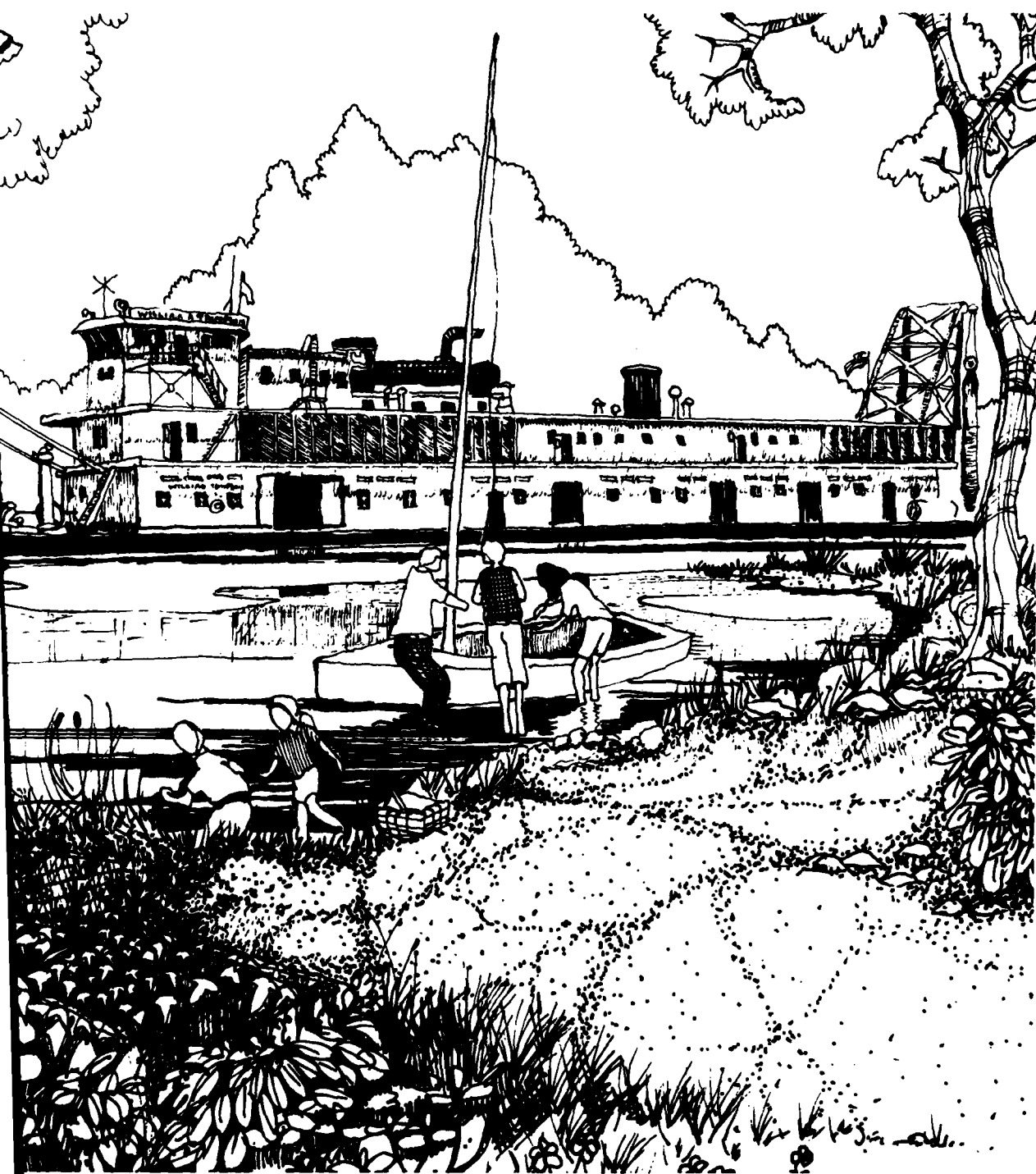
3.100 Landform containment is also associated with river zones and viewing angle. In a channelized river corridor observed from a low viewing angle, landform containment is high and receives the highest score.

3.101 The total score for a zone represents its relative aesthetic importance. In this evaluation, high scores represent visually-sensitive areas.

3.102 This systematic process for evaluating visual resources on the Mississippi River is a very useful tool that Corps planners employ to identify visual impacts associated with dredged material disposal actions. This process also provides a framework that the Corps uses to prepare beautification plans that help offset project-related visual impacts. A visual resource evaluation process will also be used for site-specific planning in the plan of development (part III) for this master plan.



FIGURE 3-3. The primary method employed to keep which can move as much as 20,000 cubic yards of vary based on water level. Because 1982 has h channel, compared to an annual average of 400,04 created from dredged material may be used by swi



keep the navigation channel open is hydraulic dredging. The St. Paul District uses the Dredge WILLIAM A. THOMPSON, which removes material daily and places it up to 7,000 feet away from the point of dredging. Yearly dredging quantities have been higher than normal water levels, approximately 750,000 cubic yards of material will be removed from the channel. Dredging has beneficial as well as adverse effects on river resources. For example, islands and beaches created by swimmers and boaters; and, in some cases, these areas provide habitat for wildlife.

3. FACTORS INFLUENCING DEVELOPMENT

Scenic Vistas

3.103 During field investigations, significant scenic vistas were noted. These scenic vistas should be considered for potential sightseeing observation locations. Table 3-13 lists the vistas by zone and the general location of the vista.

TABLE 3-13 - SCENIC VISTAS

Zone	Location
2	Locks and Dam 1
4	Bridge on State Highway 56
5	U.S. Highway 10
7	Spring Lake Park
8	Point Douglas Drive
10	Goodhue County Road E
12	Lake Pepin
13	Buena Vista State Park
13	U.S. Highway 61
15	John Latsch State Park
15	Lake Park
16	Perrot State Park
17	Lock and Dam 7
17	Minnesota State Highway 26
18	Wisconsin State Highway 35
18	Minnesota State Highway 26
19	Mount Hosmer, Lansing, Iowa
20	Clayton, Iowa, Light House
22	Pike's Peak State Park
22	McGregor Heights Park
23	Indian Burial Mounds Park
23	Guttenberg, Iowa
23	U.S. Highway 52

ACCESSIBILITY

3.104 Along both sides of the Upper Mississippi in the St. Paul District, good primary highways permit access to the outer limits of the project area. In Minnesota, the main highway along the Mississippi River is U.S. Highway 61; in Wisconsin, it is State Trunk Highway 35. In Iowa, secondary roads border the river. Many highways approach the river laterally, including Interstate Highways 94, 494, and 90, and U.S. Highways 10, 63, 53, and 18 (see figure 1-1).

3.105 Although the highway system facilitates access to the area near the river, access to the resource itself is more difficult. Along most of the river,

railroad tracks run between roads, thereby limiting access. Access includes private land in pool 2 and high bluffs, pools and in pools 1, 8, 9, of well-paved roads providing river access is often limited.

3.106 The Great River Road scenic recreational and historic Mississippi River. This road will run from Lake Itasca to only this route will be eligible for River Road funds. The road sides of the river although also be designated on the open

REAL ESTATE

3.107 Through implementation of project in the St. Paul District fee title to approximately project purposes. Essential Engineers fee title proper the lower-lying bottom lands ly 48,850 acres is under Federal or State agencies. title lands, 15,448 acres flowage easement. Although rights of use to flowage easement cannot be designated for any

3.108 Part of this master plan reflecting Federal land owners reflect river conditions as

PRIVATE/INDUSTRIAL DEVELOPMENT

3.109 A wide variety of commercial activities associated with the Upper Mississippi tributaries within the St. Paul District and management strategies diversity and distribution potential expansions. This District policy on application allocation plan to future private commercial development

3.110 To solicit information on commercial interests, a consultation District conducted a mail survey February 1981. A questionnaire



between the river and the nearby
ing access. Other factors limit-
ivate lands adjacent to the river
bluffs in the St. Anthony Falls
, 8, 9, and 10. Also, the number
providing direct access to the
ed.

er Road is intended to provide a
and historic roadway along the
This designated national route
tasca to the Gulf of Mexico, and
be eligible for the Federal Great
The road will alternate between
Although State scenic routes may
the opposite side of the river.

mentation of the 9-foot channel
aul District, the Corps acquired
imately 51,500 acres of land for
Essentially all of this Corps of
property in the pool areas is in
m lands. A total of approximate-
under permit or lease to other
encies. In addition to the fee
acres of land are held under
Although the Corps holds certain
easement lands, these lands
for any public use.

aster plan study involves identi-
ownership on base maps, which
ons as of 1976.

DEVELOPMENT

of commercial interests are asso-
r Mississippi and its navigable
the St. Paul District. Planning
egies must be sensitive to the
ution of existing businesses and
This section discusses St. Paul
application of the land use
uture uses of Federal land for
velopment.

rmation from river-related com-
a consultant for the St. Paul
ail survey from December 1980 to
estionnaire, two follow-up

postcard reminders, and a telephone follow-up resulted
in a 79.4-percent response rate (290 completed
questionnaires).

3.111 The purpose of this survey was twofold. It
provided information about the District's master plan
efforts, and it also solicited responses on a variety
of issues pertinent to recreation resource planning
and management.

3.112 This survey indicated interest in Corps recre-
ation master planning efforts. Most companies
expressed an interest in participating in the master
plan study. Such interest is significant because the
cooperation of commercial and other special interests
adds to the comprehensiveness of the master plan.

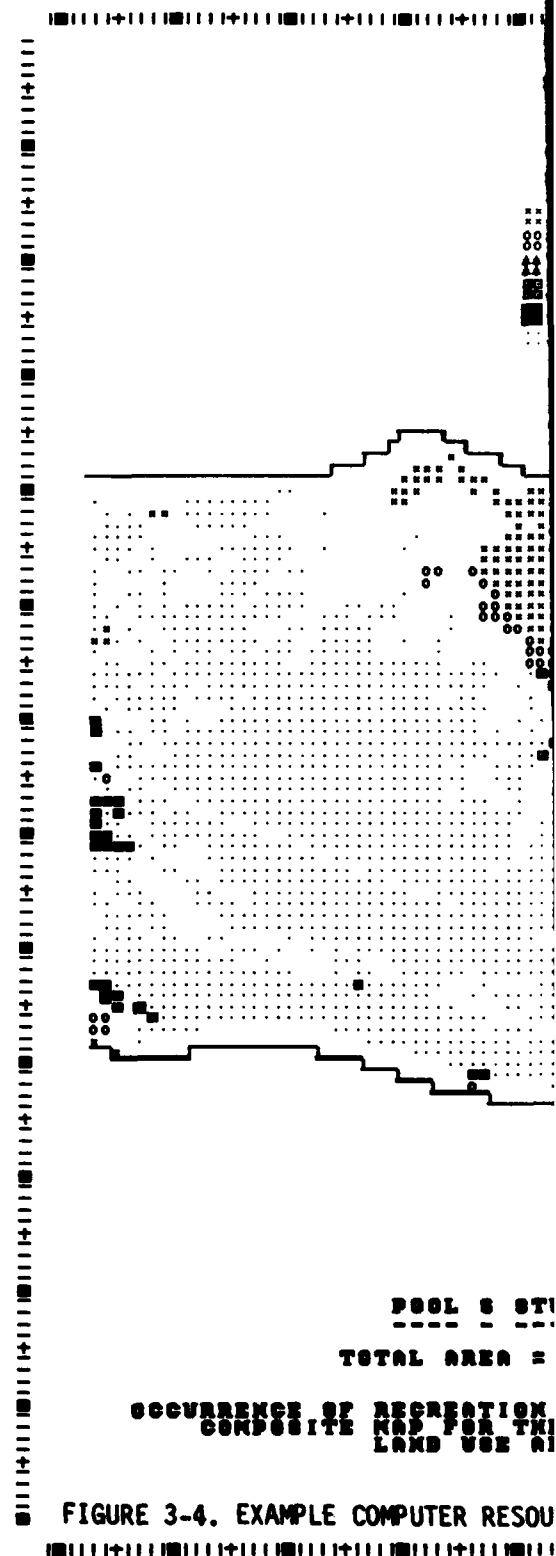
3. FACTORS INFLUENCING DEVELOPMENT

COMPUTER RESOURCE SUITABILITY MODEL

3.113 As part of this study, the St. Paul District used the computerized data files of Minnesota's Land Management Information Center (LMIC) to develop resource suitability models for various recreational activities. Models describing resource requirements of four major activities were developed for each pool. Specific models included camping, swimming, picnicking, and boat access. In addition, composite suitability models combining all activities were developed for each pool. The U.S. Fish and Wildlife Service extensively used the same computer base information, known as the Geo-Information System (GIS), to provide inputs for this study. These suitability analyses were of value in determining the most appropriate land use allocation for an area. The plan of development (part III) will use this suitability data extensively to identify possible specific development sites. The Fish and Wildlife Service will also use the GIS program to complete their refuge master plan.

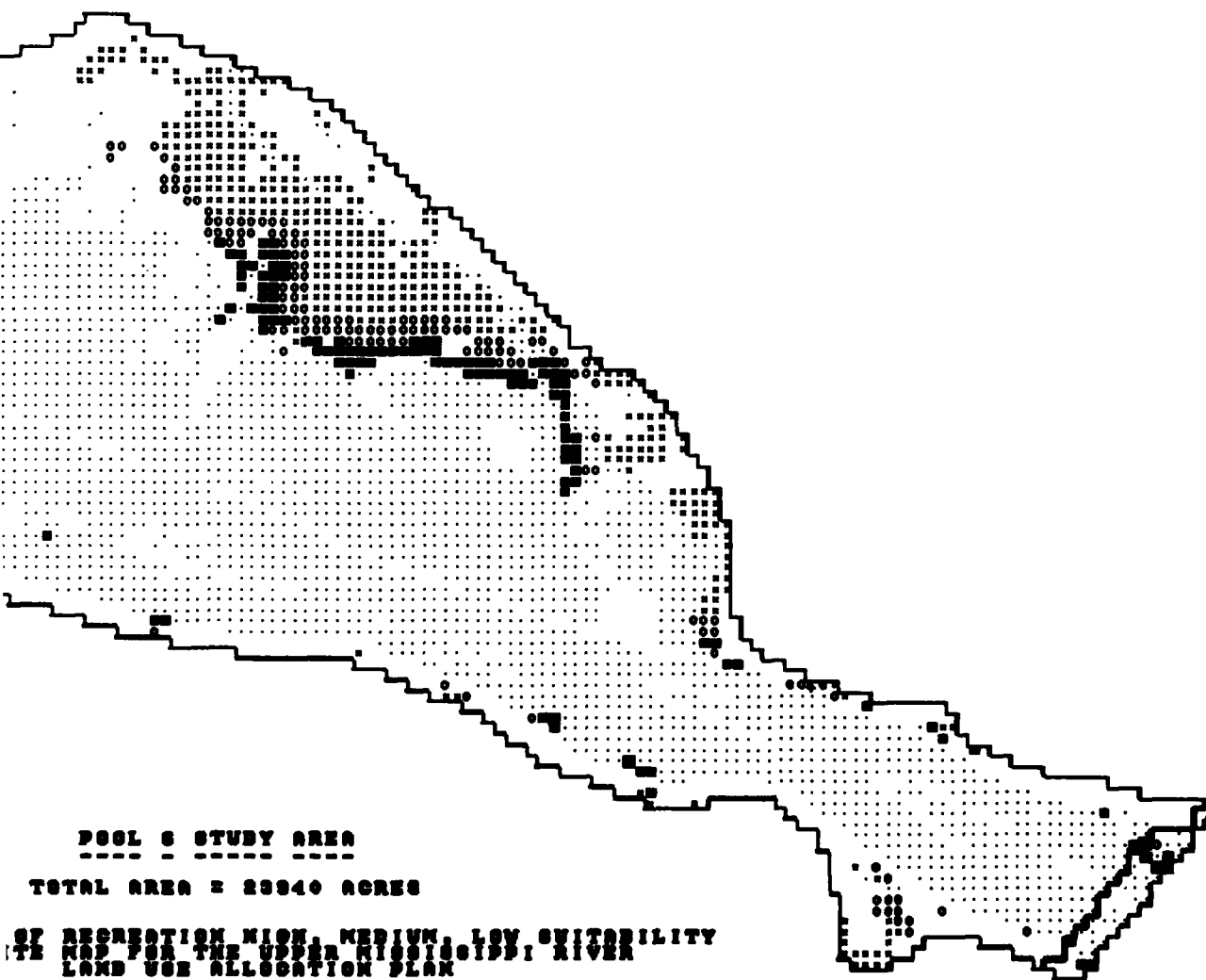
3.114 The effectiveness of a computer-based geo-information systems as a planning tool has been demonstrated in a number of past efforts. A particular advantage of these systems is the ability to quickly assemble, review, and match various resource characteristics for broad geographic areas. Figure 3-4 presents a sample composite model.

3.115 A report describing the modeling process and illustrating the specific models developed for each pool is being prepared by the St. Paul District. This report will be summarized in part III of this master plan.





	SYMBOL	COUNT	PERCENT	ACRES	LEGEND
	0	3794	39.6	9485.0	UNSUITABLE
..	1	749	7.8	1872.5	ONE LOW SUITABILITY
oo	5	268	2.8	665.0	ONE MEDIUM SUITABILITY PLUS
++	6	1	0.0	2.5	TWO MEDIUM SUITABILITIES PLUS
■	9	342	3.6	855.0	ONE HIGH SUITABILITY PLUS
■	10	39	0.4	97.5	TWO HIGH SUITABILITIES PLUS
..	20	4385	45.8	10862.5	WATER



POOL 6 STUDY AREA

TOTAL AREA = 23940 ACRES

OF RECREATION HIGH, MEDIUM, LOW SUITABILITY
IN MAP FOR THE UPPER MISSISSIPPI RIVER
LAND USE ALLOCATION PLAN

LE COMPUTER RESOURCE SUITABILITY MODEL

3. FACTORS INFLUENCING DEVELOPMENT

SYSTEM-WIDE ANALYSIS

3.116 Traditionally, river planners have tended to view the navigation pools on the Upper Mississippi as separate entities with little impact on each other. Yet, recreational facilities in one pool can have tremendous impact on recreational use in another. For example, the siting of a large marina could affect shoreline use many miles up or down the river from the facility. Or, user pressure from the St. Croix River has obvious impacts on recreational craft lockages at locks and dams 2 and 3.

3.117 Because of its linear nature, the river system serves as a natural transportation corridor for recreationists, both along and on the water. Locations of population centers, major highways, bridge crossings, navigational locks, and shoreline river access points significantly influence the density and distribution of public uses on the river. In an attempt to further examine how these and other variables influence general user patterns, a set of system-wide data was prepared and evaluated. This systemic perspective provided a useful tool for the preparation of the land use allocation plan.

3.118 The following variables, considered important influences on user patterns on the Upper Mississippi River, were evaluated.

- Population concentrations. (Public pressure is greatest at the upper end of the system, centering on the Twin Cities area. Before the 1980's, many Twin Citians looked to northern Minnesota and Wisconsin for water recreation. With climbing energy costs, however, boating pressure on the upper navigation pools has increased noticeably in the last several years.)
- River crossings.
- State and county park and recreation areas and their visitation.
- Recreation navigation access areas, including ramps, marinas, boat clubs, and high-density private docking areas.
- High-density water surface use areas.
- Existing and proposed barge fleeting sites.
- Projected recreation demand-supply-needs. (An update was provided to the GREAT I analysis.)





FIGURE 3-5. Pools formed by construction of the many Lake Pepin, provide excellent water for sailing. On same areas may already experience overcrowding during



d by construction of the many locks and dams provide varied recreation opportunities. Several large open expanses of water, such as
ellent water for sailing. Current trends indicate that demands for water-based opportunities will continue to increase. In fact,
experience overcrowding during peak-use periods. Active management is needed to alleviate this problem.

3. FACTORS INFLUENCING DEVELOPMENT

3.119 Figure 3-6 summarizes key system-wide variables. The following information is displayed in that figure:

- **Bridges** - Several bridges span the Mississippi River in the Twin Cities between miles 857.6 and 832.6. Other bridges are located at Hastings (mile 814), Red Wing (mile 790.6), Wabasha (mile 760.2), Winona (mile 725.9), North La Crosse (mile 701.8), La Crosse (mile 697.5), Lansing (mile 663.4), and Prairie du Chien (mile 634.6).
- **Major Public Use Areas** - All river miles given are close approximations. Both Federal and State field resource managers provided data. For simplicity, public use areas are divided into two distinct groups: fishing and boating with the symbol , and camping shorelines with the symbol .



Fishing and Boating:

- A. Upstream and off main channel from Red Wing, mile 797.0 to mile 807.0 (10 river miles).
- B. 1. Up and downstream of Wabasha, mile 757.0 to mile 762.0 (5 river miles).
2. Lake Pepin and Read's Landing, mile 763.0 to mile 785.0 (22 river miles).
- C. 1. Downstream of Zumbro River, mile 743.0 to mile 750.0 (7 river miles).
2. Downstream of lock and dam 5, mile 733.0 to mile 738.2 (5.2 river miles).
- D. Minnesota Slough downstream of lock and dam 8 off the main channel, mile 672.0 to mile 677.0 (5 river miles).



Camping Shorelines:

- A. 1. Downstream of lock and dam 6, mile 711.0 to mile 713.0 (2 river miles).
2. Downstream of lock and dam 7, mile 695.0 to mile 701.5 (6.5 river miles).
- B. 1. Goose Island downstream of La Crosse, near mile 691.0.
2. Downstream of lock and dam 8, mile 674.0 to mile 678.0 (4 river miles).
- C. 1. Jackson Island, mile 641.5 to mile 646.5 (5 river miles).
2. Upstream of lock and dam 10 at Guttenberg, mile 616.0 to mile 626.0 (10 river miles).

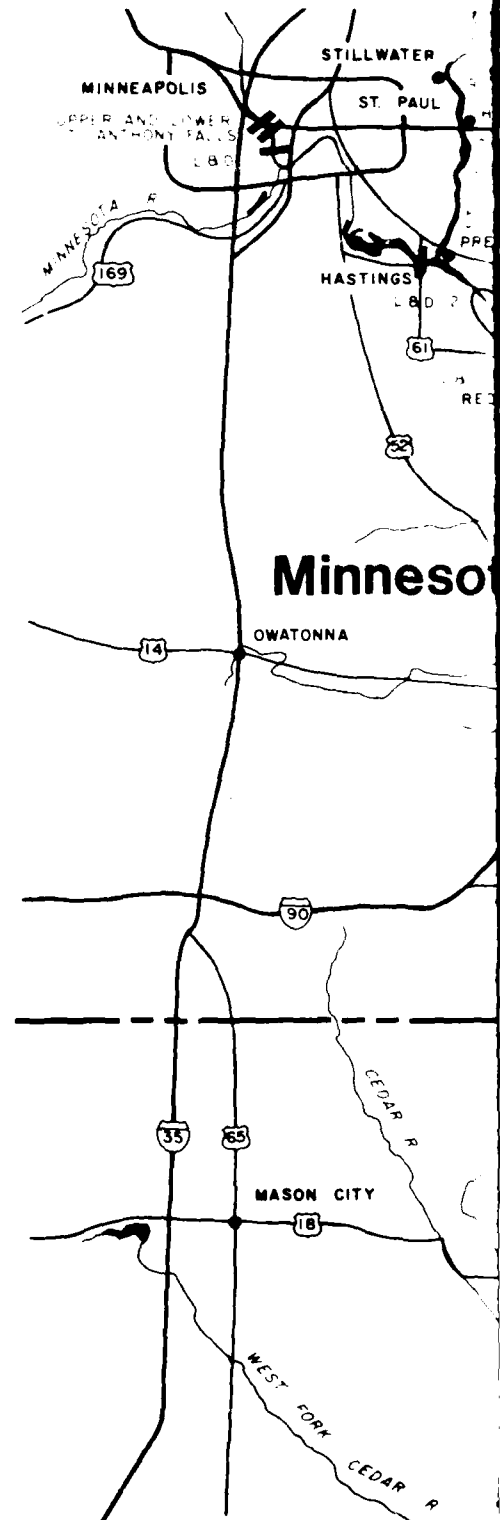
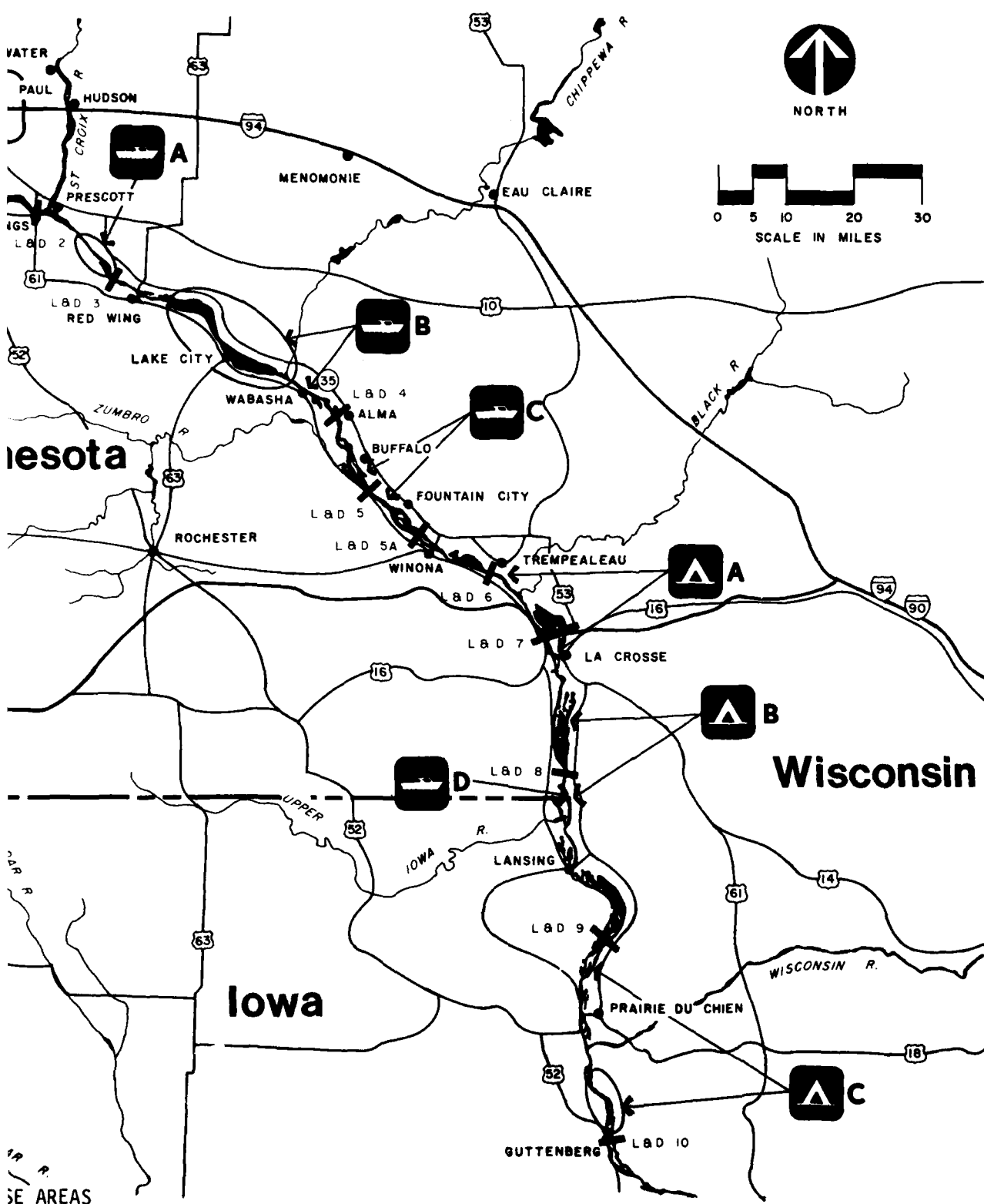


FIGURE 3-6. MAJOR PUBLIC USE AREAS



3. FACTORS INFLUENCING DEVELOPMENT

PROGRAMS OF OTHER AGENCIES

3.120 St. Paul District planners carefully considered programs and policies of other government agencies in the development of this land use allocation plan and in the development of site-specific plans. In particular, the District has worked very closely with the U.S. Fish and Wildlife Service because the Corps and FWS share management jurisdiction over the Upper Mississippi.

3.121 This section presents information on the following agency and interagency programs that have potential to the Mississippi River and to associated planning: U.S. Fish and Wildlife Service (FWS); National Park Service; U.S. Department of Transportation; Upper Mississippi River Basin Commission; Great River Environmental Action Team; Minnesota-Wisconsin Boundary Area Commission; Upper Mississippi River Conservation Committee; Metropolitan River Corridors Study Committee; the States of Iowa, Minnesota, and Wisconsin; regional planning commissions; and county and local agencies.

3.122 The Conclusions and Recommendations section of this document provides information about how the St. Paul District and the Region 3 office of the FWS propose to manage Federal lands in the short-term future in relation to the allocations made as part of this study.

U.S. Fish and Wildlife Service

3.123 Upper Mississippi National Wildlife and Fish Refuge - The Upper Mississippi National Wildlife and Fish Refuge was established by Congress in 1924. It stretches 284 miles through the river corridor from Wabasha, Minnesota, to Rock Island, Illinois. Managed by the U.S. Fish and Wildlife Service (FWS), the refuge comprises five districts, with a central headquarters at Winona, Minnesota.

3.124 This refuge consists of approximately 195,000 acres of wooded islands and riverbanks, sandbars, and open-water marshes. It is maintained to provide resting and feeding habitat for migratory waterfowl species, wintering habitat for eagles and other raptors, year-round habitat for fish and furbearers, and summer habitat for colonial water birds. Actual physical management of the refuge has been limited because of its massive size and the general lack of

means to make alterations, within the refuge are legal waters of the United States. emphasis has therefore been on and on setting regulations for furbearers. This land use provide the land use framework Wildlife Service master planning

3.125 Trempealeau National Wildlife Refuge - The Trempealeau National Wildlife Refuge facility surrounded by the Upper Mississippi River Wildlife Refuge on the Wisconsin side between Winona and Trempealeau. Established in 1934 as a migratory bird refuge, 10,000 acres were acquired at that time. In 1979, 10,000 acres, part of the Delta Fish and Wildlife Refuge Act, were acquired until March 9, 1979. The refuge master plan provides the long-range plan for management.

3.126 Chronology of Project Development with U.S. Fish and Wildlife Service - The Upper Mississippi National Wildlife and Fish Refuge was established by the Upper Mississippi River National Wildlife and Fish Refuge Act (June 1924) authorized land acquisition and fish and wildlife conservation.

3.127 The River and Harbor Act of 1907 authorized the Department of the Interior for the 9-foot navigation channel. The site for the refuge was the Engineers was granted permission to acquire land for the navigation project.

3.128 Management of much of the navigation project was transferred to the Sport Fisheries and Wildlife (FWS) in the 1940's. Flowage easements, however, were granted by the Corps.

3.129 Section 3 of the Fish and Wildlife Act of August 14, 1946 (Public Law 48-46) for use of water resource project maintenance, and management of the habitat, to be administered by the Secretary of the Interior. The Act was signed by the Secretary in 1953 and signed by the Secretary



erations, and because all waters are legally defined as navigable States. Most refuge management has been on controlling land uses. Regulations for taking waterfowl and land use allocation plan will be the framework for detailed Fish and Wildlife planning.

National Wildlife Refuge - Trempealeau Refuge is an independent refuge established by the Upper Mississippi National Wildlife and Fish Refuge on the Wisconsin side of the river at Trempealeau. It was authorized in 1909 as a bird refuge. However, only 700 acres at that time. The remaining 5,700 acres, Delta Fish and Fur Farm, were not added until 1979. The recently completed plan provides the FWS with a meaningful management of this refuge.

Project Development - Relationship with Wildlife Service - The Upper Mississippi National Wildlife and Fish Refuge was established by the Upper Mississippi River Wildlife and Fish Act (June 7, 1924). This act provided for the acquisition of land along the Mississippi for conservation and management.

The Harbor Acts of 1930 and 1935 authorized the Army to acquire land for a navigation channel project. Acquisition was then halted. The Corps of Engineers requested permission to overflow refuge land on project in the early 1930's.

Much of the land acquired for the project was transferred to the Bureau of Wildlife (now the FWS) during the 1930's, however, were reserved by the Army.

The Fish and Wildlife Coordination Act (Public Law 79-732) provided for source projects for conservation, management of wildlife resources and lands administered by State agencies or by the Secretary of the Interior. General Plans drawn up by the Secretary of the Army, the

Secretary of the Interior, and the heads of the respective State conservation agencies terminated previous permits and agreements and called for revocation of pertinent executive orders and public land orders. Navigation project lands were made available by the Secretary of the Army to the Secretary of the Interior for wildlife conservation and management by the Cooperative Agreement between the Corps of Engineers and the Bureau of Sport Fisheries and Wildlife in 1954.

3.130 The Fish and Wildlife Coordination Act of 1958 (Public Law 85-624) amended the earlier act; and, in 1963, the Cooperative Agreement was revised. Under this agreement, 41,442 acres of Corps-administered land in pools 4 through 10 (approximately 95 percent of Corps-administered land in those pools) was made available to the Bureau of Sport Fisheries and Wildlife. For purposes of management under the agreement, these lands were included in the Upper Mississippi National Wildlife and Fish Refuge. The Fish and Wildlife Service also owns 75,550 acres in fee title in pools 4 through 10. Plans for management of the lands as a Federal refuge were coordinated with and approved by the States of Minnesota, Wisconsin, and Iowa.

3.131 Additionally, 4,123 acres in pool 3 (approximately 74 percent of Corps-administered land in that pool) have been leased to the Minnesota Department of Natural Resources for wildlife management, maintenance, and conservation. Remaining Corps lands not included in the General Plan are almost entirely lands where locks, dams, and related structures are located. (Source for acreage figures: 1979 Recreation Resource Management System (RRMS)).

National Park Service

3.132 The National Park Service (NPS) is charged with preserving and protecting the Nation's cultural and natural heritage for present and future use and enjoyment. To achieve this goal, NPS uses five major classifications of cultural and natural resource management units: national parks, monuments, historical sites, recreation areas, and wild and scenic rivers. In the study area are a national monument, a national scenic river, and numerous national historical sites.

3. FACTORS INFLUENCING DEVELOPMENT

3.133 The Wild and Scenic Rivers Act of 1968 (Public Law 90-542) established a Wild and Scenic Rivers system. This act also states that rivers designated as components of the system shall be classified and administered as wild, scenic, or recreational.

3.134 In 1972, Public Law 92-560 amended this act by designating the 52-mile-long Lower St. Croix River as a component of the national system. The NPS administers the Lower St. Croix between Taylors Falls and Stillwater; the States of Wisconsin and Minnesota administer the portion between Stillwater and Prescott. The upper 10.3 miles of the river (between Taylors Falls and the Chisago-Washington County line) is classified as a scenic river; the remainder of the Lower St. Croix is classified as a recreational river.

3.135 The Lower Wisconsin River (another tributary) and parts of the Upper Mississippi between Lake Itasca and Anoka (north of the study area) have been studied for inclusion as a scenic river in the National Wild and Scenic Rivers System.

3.136 In April 1981, the NPS completed its Development Concept Plan for the Lower St. Croix National Scenic Riverway. Proposed developments include visitor information exhibits, an interpretive trail, and canoe accesses and trail. A major goal of NPS administration of the Lower St. Croix National Scenic Riverway is balancing the demand for recreational use against the objective of preserving the natural values of the area.

3.137 Effigy Mounds National Monument was established in 1949 near McGregor, Iowa. Much of the park's 1,244 acres contain prehistoric Indian mounds. Although only minimal facilities are provided for water-associated activities, the park attracts many people to the area. A southern extension of Effigy Mounds Monument at Sny McGill Creek is undeveloped but offers river access through Sny McGill Landing (operated by the Iowa Conservation Commission).

U.S. Department of Transportation

3.138 Great River Road - The Great River Road (GRR) was originally conceived in 1938 as a parkway along the Mississippi from the source near Lake Itasca to the Gulf of Mexico. It is the third major recreational and scenic highway in the country, following development of the Natchez Trace Parkway in the South and the Blue Ridge Parkway in the East. The GRR is

intended to provide a scenic, recreational historic roadway along the Mississippi. In addition to providing recreational opportunities for the traveler, the GRR is intended to conserve natural amenities such as woodlands, rivers, and scenic vistas.

3.139 The federally-designated Great River Road alternates from one side of the river to the other crossing at existing bridge locations. In the study area, the GRR extends from the head of navigation at Minneapolis to Hastings, Minnesota, where it crosses the river to Prescott, Wisconsin. From Prescott, the designated route parallels the Mississippi on the Wisconsin side until it crosses the river at Lansing, Iowa, and continues south through GRR where the master plan study area ends.

3.140 The GRR program is administered by the State Departments of Transportation. Funding for development of projects adjacent to the GRR route is on a Federal-State cost-shared basis. The Federal Highway Administration (FHWA) pays 75 percent of total development costs, with the remaining 25 percent the responsibility of local governments. Funds are offered only to the 10 States along the Mississippi River. Appropriations come from trust funds and general funds.

3.141 On March 11, 1981, FHWA announced that funding had been rescinded by presidential action. However, projects that received Federal approval before funding and that had funds obligated were not affected. This deferral lasted through fiscal year 1981 when the President decided to fund them through future fiscal years.

3.142 U.S. Coast Guard - The Ports and Waterways Safety Act of 1972 (Public Law 92-340) authorizes the Coast Guard (U.S. Department of Transportation) to prevent damage to vessels, bridges, and structures on navigable waters and adjacent lands to protect navigable waters against environmental damage resulting from vessel or structure damage. The Secretary of Transportation is authorized to regulate vessel traffic in hazardous areas or during periods of adverse weather or vessel congestion. Measures for vessel traffic control include vessel size restrictions, speed limits, and operating conditions. The Secretary of Transportation may also prescribe safety equipment, investigate any incident involving damage to vessels or structures on navigable



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Guard - The Ports and Waterways
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(Department of Transportation) to
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rtation is authorized to control
azardous areas or during conditions
or vessel congestion. Methods of
rol include vessel size require-
s, and operating conditions. The
rtation may also prescribe minimum
vestigate any incident involving
or structures on navigable waters,

and issue rules, regulations, and standards necessary
to implement this law.

3.143 Installation and maintenance of primary naviga-
tion aids are also Coast Guard responsibilities. The
Corps District Engineer is authorized to confer with
the Coast Guard District Commander about establishment
or alteration of permanent navigation aids. The Corps
is only responsible for navigation aids required
temporarily because of construction and zoning
ordinances, such as buoys to mark dredging equipment.

3.144 The Coast Guard Auxiliary, a civilian volunteer
organization established by Congress to promote
recreational boating safety, attempts to meet its
objective through boater education and safety patrols.
Boater education includes safety courses for the
public and examination of recreational boats, upon
request of the owners or operators, for safety
equipment required by Federal and State law.
Auxiliary members also help Coast Guard rescue and
assistance missions. A radio facility staffed by
Auxiliary members opened recently near Prescott,
Wisconsin, for this purpose.

Upper Mississippi River Basin Commission (1)

3.145 Twin Cities Level B Study - The Twin Cities
Level B Study, covering the Minneapolis-St. Paul
seven-county metropolitan area, was completed in 1978.
This study identified various recreation-related
issues on the Upper Mississippi, Lower St. Croix, and
Minnesota Rivers: water quality in pool 2, commercial
navigation, wetland preservation and management, and
recreational water surface use management. Several
planning recommendations were made, generally oriented
toward achievement of environmental quality goals:

- To achieve a 1983 goal of fishable and swimmable
water quality in pool 2 through pollution
abatement planning procedures and implementation
of water treatment technologies consistent with
the Federal Water Pollution Control Act
Amendments (Public Law 92-500).
- To establish a coordinated, well planned program
to insure that future barge-fleeting areas and

(1) The UMRBC was discontinued by a Presidential
Executive Order on December 31, 1982.

3. FACTORS INFLUENCING DEVELOPMENT

terminal facilities develop in a balanced fashion with minimum impact on the environment. Since barge traffic is expected to increase, safe mooring facilities for recreational craft at the locks and dams were recommended.

- To establish a regional program of wetlands management to increase hunting, trapping, and nature study opportunities.
- To develop and implement a management plan and associated boat launch strategies for the area rivers.

3.146 UMR Main Stem Level B Study - The draft report completed in 1980 includes issues such as recreational boating safety and land use management planning. Near-term recommendations on boating safety were that Congress should enact a 5-year minimum extension of Federal legislation to fund longer-range planning for State programs and that the concerned States should increase funding for boating safety and security programs with revenue techniques such as licensing fees, launch fees, and unrefunded State marine fuel tax. The mid-term recommendation was that appropriate State agencies should consider designating certain portions of the river for limited recreation boating.

3.147 Near-term recommendations regarding land use management planning were that the Fish and Wildlife Service should designate the river basin as a high priority area in its wetlands inventory program and that appropriate Federal and State agencies should cooperate in additional inventories of critical areas. The UMRBC should coordinate these inventories through the establishment of a Water and Related Land Resource Task Force. The mid-term recommendation was that this task force consider establishment of a riverine zone management program to address long-term land management needs.

Great River Environmental Action Team

3.148 GREAT I Study - In 1974, under the leadership of the Corps of Engineers and the U.S. Fish and Wildlife Service (the two principal river management agencies), an interagency team (authorized by Section 117 of the Water Resources Act of 1976) was organized to identify and assess problems associated with multi-purpose use of the river and to develop recommendations for improved river management. The Upper Mississippi

River was divided into three study groups called a Great River I Team (GREAT). The first study group covered the river system from the mouth in Minneapolis-St. Paul, Minnesota, to Iowa (the St. Paul District, Corps of Engineers, portion of the navigable river).

3.149 GREAT I comprised the following: U.S. Department of the Interior - Fish and Wildlife Service, U.S. Department of Defense - Corps of Engineers, U.S. Department of Agriculture - Conservation Service, U.S. Department of Transportation - Coast Guard, U.S. Environmental Protection Agency, State of Iowa - Natural Resources Commission, State of Minnesota - DNR, State of Wisconsin - DNR, U.S. Fish and Wildlife Service, Minnesota-Wisconsin Conservation Commission (nonvoting member), Upper Mississippi River Conservation Committee - (nonvoting member), and general public.

3.150 From 1974 through 1980, GREAT I conducted an extensive program of research and development projects, addressing total river resources.

3.151 The GREAT I study was completed in 1980. The St. Paul District has reviewed the recommendations. Using those recommendations for Corps implementation, the District developed an implementation report which outlines three possible courses of action:

- A Basic Program, which outlines recommendations that can be implemented by the District's ongoing project implementation authority or funding implementation.
- A First Priority Program, which outlines recommendations that the District believes are most important and should be implemented, if funding were provided.
- An Early Implementation of GREAT I, which outlines how all of the GREAT I recommendations could be implemented, if sufficient funding and funds were available.

3.152 The District Engineer has recommended the First Priority Program to higher authority.



into three study areas, each with a Great River Environmental Action first study completed was GREAT I, system from the head of navigation t. Paul, Minnesota, to Guttenberg, ul District, Corps of Engineers, vigable river).

prised the following members: U.S. he Interior - Fish and Wildlife artment of Defense - Army Corps of Department of Agriculture - Soil Service, U.S. Department of Coast Guard, U.S. Environmental State of Iowa - Iowa Conservation of Minnesota - Department of Natural of Wisconsin - Department of Natural nesota-Wisconsin Boundary Area ing member), Upper Mississippi River ittee - (nonvoting member), and the

rough 1980, GREAT I carried out an of research and pilot action pro- total river resource requirements.

study was completed in September District has reviewed the GREAT I sing those recommendations desig- mplementation, the District has mentation report detailing its own r implementing GREAT I. The report ible courses of action:

ram, which outlines the GREAT I ons that can be implemented under 's ongoing programs, if no addi- rity or funding is provided for n.

ity Program, which identifies those mmendations that the District most important and indicates how e implemented, if the authorities ere provided.

ementation of GREAT Program, which all of the GREAT I recommendations emented, if sufficient authorities e available.

Engineer has recommended the First o higher authorities within the

Corps. In the area of recreation, the following are the major points of the First Priority Program:

- Recreation enhancement will be accomplished whenever possible during ongoing channel maintenance operations.
- GREAT I recommendations pertaining to a specific recreation problem will be addressed in part III of this master plan.

Minnesota-Wisconsin Boundary Area Commission

3.153 The Minnesota-Wisconsin Boundary Area Commission (MWBAC) was created through an interstate compact in 1965 to facilitate communication between Minnesota and Wisconsin regarding the use of the resources of the Upper Mississippi and the Lower St. Croix Rivers.

3.154 The MWBAC assists the two States in cooperative efforts by conducting studies and making recommendations on plans, policies, development proposals, public management, uniform laws, conservation efforts, and use of river corridor waters and lands. It helps the States and their local subdivisions to coordinate programs, plans, and projects with one another, and it assists their participation in the many Federal programs on the St. Croix and Mississippi Rivers. Under a special Federal-State cooperative agreement, the MWBAC also serves as the coordinator for the St. Croix National Riverway.

Upper Mississippi River Conservation Committee

3.155 The Upper Mississippi River Conservation Committee (UMRCC) was organized in 1943 by the States of Minnesota, Wisconsin, Illinois, Iowa, and Missouri, with the encouragement of the Bureau of Sport Fisheries (now the U.S. Fish and Wildlife Service) and the Corps of Engineers. The UMRCC was formed to facilitate cooperation between the States for studies of the river's natural resources, to exchange information about the river and its problems at regular meetings, and to promote cooperation in resource management of interstate waters, including development of more uniform laws and regulations affecting use of the river's natural resources. The committee works closely with the U.S. Fish and Wildlife Service, the Corps of Engineers, and the U.S. Public Health Service.

3. FACTORS INFLUENCING DEVELOPMENT

3.156 The emphasis of the UMRCC is on fisheries, wildlife, and recreation, although the committee also has water quality and law enforcement sections. UMRCC studies include recreational use surveys for pools 5 and 9, and sport fishery surveys done at 5-year intervals between the 1962-1963 and 1972-1973 seasons. The committee also has written a guide for an Upper Mississippi River system monitoring plan to document ecological impacts from navigational capacity expansion and from operation and maintenance of the existing navigational system. A reference library is maintained by the UMRCC at Rock Island, Illinois.

3.157 A recent UMRCC publication of interest to this master plan study includes a paper entitled "Outdoor Recreation: Big Business on the Upper Mississippi River System." This paper reviews available estimates of the value of river resources for recreation uses. The paper concludes with several points, including: "People spend large sums of money to recreate on the UMRs. The exact amount is unknown, but it seems inevitable that the total annual recreation expenditure is in the hundreds of millions of dollars. . . . the total figure could be over a billion dollars a year." Part III of this master plan will address the need for improved methods of measuring recreation use. Such improved measurement is needed to support future recreation valuation efforts.

Metropolitan River Corridors Study Committee

3.158 The National Park Service completed the Twin Cities Metropolitan River Corridors Reconnaissance Survey in December 1980. This survey describes the river resource and discusses trends and potential threats to it as well as efforts taken to protect the resource. The primary intent of this reconnaissance study was to determine the potential for implementation of Federal programs to enhance recreation opportunities on the Upper Mississippi, St. Croix, and Minnesota Rivers. It also reviews options for resource protection. While the survey makes no recommendations, the information it provides will help determine whether the river resource is of sufficient national significance to warrant a study of alternatives.

3.159 Title IX of Public Law 96-607 (December 28, 1980) established an independent study committee (the Three River Corridors Study Committee) to work with a regional agency (the Metropolitan Council) in studying

preservation, enhancement, protection, and development of designated recreation areas along the river. This committee also recommends standards and actions for optimizing the recreation value of the river, wildlife, historical, natural, scientific, and cultural values of the area with the minimum of restricting economic uses of these resources.

State of Iowa

3.160 Iowa Floodplain Management Natural Resources Council (INRC) enforces regulations for orderly development and use of the floodplain of any river within that State. The INRC is directed to enforce encroachment limits, protection measures, and protection levels appropriate to the characteristics and to the use of the floodplain. The INRC may cooperate with and assist local governments in establishing such regulations. The INRC helps establish a development constraint system, land use allocations and site-specific regulations.

3.161 Chapter 455.A, Code of Iowa, regulates floodplain development. No construction is to be issued if the work meets certain conditions. No construction can require removal of unpermitted construction if notification is made after completion of the work. Development that obstructs flow is not allowed in floodplains.

3.162 Counties and municipalities have the authority to zone with respect to floodplains. Floodplain ordinances or regulations require approval before adoption.

3.163 Yellow River State Forest - administered by the Iowa Conservation Commission (ICC), Yellow River State Forest lies in northeast Iowa along the Mississippi River. Recreational facilities there include horse and foot trails, and primitive camping. Additionally, the forest offers trout fishing, hunting, and sightseeing.

3.164 The forest is managed under the concept that encompasses timber, watershed management, and agricultural recreation management aims to encourage recreational opportunities such as picnicking, camping, hiking, and



ancement, protection, and use of on areas along the river corridors. so recommends to Congress policies timizing the recreational, fish and al, natural, scientific, scenic, and f the area without unreasonably ic uses of these resources.

Floodplain Management Program - The Iowa Council (INRC) establishes and s for orderly development and wise ain of any river or stream within INRC is directed to establish s, protection methods, and minimum s appropriate to the flooding to the use of the floodplain. The with and assist local governments n regulations. These regulations velopment constraints framework for s and site-specific development.

s, Code of Iowa, requires the INRC ain development. An INRC permit is meets certain criteria. The INRC val of unpermitted floodplain tification is made within a year the work. Development that would t allowed in floodways.

municipalities have been authorized pect to flood hazards. Local s or regulations must receive INRC tion.

State Forest - A 6,292-acre forest e Iowa Conservation Commission State Forest lies within Allamakee Iowa along the Upper Mississippi. ities there include picnic areas, ls, and primitive camping sites. forest offers opportunities for ng, and sightseeing.

s managed under a multiple-use sses timber, wildlife, recreation, t, and agricultural products. The ent aims to encourage compatible untunities such as hunting, fishing, ng, hiking, driving, horseback

riding, snowmobiling, bicycling, and nature study. The wildlife management aims to improve wildlife habitat through forest management and food plots.

3.165 Iowa Scenic River Program - Iowa's Scenic Rivers Act of 1970 gives the Iowa Conservation Commission (ICC) authority to designate, as part of a scenic rivers system, rivers and adjacent land areas with outstanding water conservation, scenic, fish, wild-life, historical, or recreational values.

3.166 To assist in scenic rivers management, counties and cities must zone lands adjacent to the river or establish other controls. The Upper Iowa River, which flows into the Mississippi, is presently the only designated scenic river.

3.167 Iowa Protected Water Areas Program - In 1981, the ICC met the provision in the Iowa Scenic Rivers Act for a statewide scenic rivers plan by issuing the Iowa Protected Water Areas General Plan. The phrase "Protected Water Areas" replaced "Scenic Rivers" since this plan protects lakeshores and marshes as well as rivers and streams. The Protected Water Areas Plan provides the State legislature, the ICC, and other interested agencies with the necessary guidelines to protect the natural and cultural resources within the State's scenic lakeshores, river corridors, and marshes. Fee title land acquisition, conservation easements, leases, State preserves dedication, and tax incentives, in addition to local zoning ordinances, are recommended methods of protecting designated areas.

3.168 The goal of the Protected Water Areas Program is a system for designating portions of selected lakes, rivers, streams, and marshes for preservation, protection, and enhancement of outstanding natural and cultural resources of water and associated land areas.

3.169 Iowa State Preserves Program - The Iowa Preserves Act created a State Preserves System and a State Preserves Advisory Board. A State preserve is an area of land or water designated for maintenance in a condition as close as possible to its natural condition. However, the character of the area need not be completely primeval at the time of dedication. Areas with unusual floral, faunal, geological, archeological, visual, or historic features of scientific or educational value are also eligible for

3. FACTORS INFLUENCING DEVELOPMENT

State preserve designation. The advisory board was established to recommend appropriate State-owned lands for dedication as preserves. A preserve is formally dedicated after final approval by the Governor. The State Preserves Act effectively prohibits environmental alterations in designated areas. State preserve designation presently provides the greatest protection for such significant land areas. Within the study area, the Fish Farm Mound, near New Albin, is included in the Iowa State Preserves System.

3.170 Iowa State Parks and Recreation Areas System

The Iowa Conservation Commission administers the State parks and recreation areas in Iowa. Within the study area, two parks are included in the system: Pikes Peak and McGregor Heights. Both parks are in Clayton County.

State of Minnesota

3.171 Minnesota Shoreland Program - The Shoreland Management Act of 1969 established a program to guide shoreland development in order to preserve and enhance the quality of surface waters, to preserve the economic and natural environmental values of shorelands, and to provide for the wise use of water and related land resources. Shoreland is defined as "land within 1,000 feet from the ordinary high watermark of a lake, pond, or flowage; and land within 300 feet of a river or stream or the landward side of a floodplain delineated by ordinance on such a river or stream, whichever is greater." Regulations developed under this program specify building setback requirements, minimum lot sizes per structure, building elevation above high water, designation of types of land uses, and sewage system design criteria. All counties and municipalities must adopt shoreland management ordinances approved by the DNR. A knowledge of these guidelines and the plans developed under this program is valuable for a systems approach to shoreline management.

3.172 Minnesota's Floodplain Program - Authorized by the Flood Plain Management Act, this program was established to reduce flood damage and flood-related loss of life. The act requires emphasis on nonstructural measures such as zoning, flood proofing, and flood warning. Local governments must establish floodplain ordinances within specific time limits after adequate technical data are available. The Minnesota Department of Natural Resources (DNR) is

responsible for ensuring local compliance with the act. If a local governmental unit fails to meet the time limit, the Commissioner of Natural Resources may adopt an ordinance for that unit. The DNR published "Statewide Standard Management of Flood Plain Areas of Minnesota" (Reg. NR85 et seq.). These guidelines provide standards for local ordinances.

3.173 State law generally allows floodplain management that would cause an increase in flood stage. However, the Commissioner of Natural Resources may be more or less restrictive of this limit, depending on project circumstances. As with the shoreland program, floodplain management activity in the floodplain is use management.

3.174 Richard J. Dorer Memorial Forest - This forest lies in southeastern Minnesota along the Upper Mississippi River within Wabasha, Dodge, Olmsted, Winona, and Fillmore Counties. It extends from about 20 miles north of St. Paul-Minneapolis metropolitan area to the Minnesota border. The Minnesota DNR Division of Forests currently administers about 38,000 acres in the forest. Federal ownership of the forest in Minnesota is 45,000 to 50,000 acres. The Upper Mississippi National Wildlife and Fish Refuge and in Corps of Engineers navigational channels. About 90 percent of the land in the Memorial Forest is privately owned.

3.175 The Richard J. Dorer Memorial Forest includes most of the State's floodplain plus significant numbers of deer, turkey, grouse, and other game species. Ten miles of designated trout streams, seven miles of designated canoe and boating routes, and several life management areas within the forest have been nominated for National Scientific and Natural Area status. Recreational resources include trout fishing, municipal campgrounds, and the National Wildlife and Fish Refuge.

3.176 Minnesota State Park System - The Minnesota DNR administers State parks and waysides. Recreation opportunities provided by State parks include hiking, trail use, nature interpretation, and sightseeing. Four State park waysides are in the study area.



nsuring local compliance with the governmental unit fails to act within the Commissioner of Natural Resources' guidance for that unit. In 1970, the "Statewide Standards and Criteria for Flood Plain Areas of Minnesota" (Minn. Stat. 10.01). These guidelines describe local ordinances.

generally allows floodplain encroachment of up to 0.5 foot of levee, the Commissioner of Natural Resources is more or less restrictive in enforcing depending on project-specific circumstances. In the shoreland program, the primary concern in the floodplain program is land

J. Dorer Memorial Hardwood State Forest - This forest lies in southeast Minnesota along the Mississippi River within Dakota, Goodhue, Winona, Fillmore, and Houston counties, extending from about 20 miles south of the Minneapolis metropolitan area to the Iowa border. Minnesota DNR Division of Forestry manages about 38,000 of the 2,000,000 acres. Federal ownership in southeast Minnesota is about 100 to 50,000 acres, mostly in the National Wildlife and Fish Refuge. The forest supports game species. Over 200 miles of streams and rivers flow through the forest. The forest is a major navigation project. Over 100 miles of land in the Memorial Hardwood Forest

J. Dorer Memorial Hardwood State Forest is one of the State's wild turkey population. Significant numbers of white-tailed deer, and other game species. There are 297 miles of streams, seven State parks, three canoe and boating routes, and seven wildlife areas within the forest. Fifty sites have been nominated for inclusion in the National Natural Areas Program. Other resources include trails, private and public lands, and the Upper Mississippi National Wildlife and Fish Refuge.

State Park System - The DNR administers and maintains recreation opportunities. Recreation opportunities at State parks include camping, interpretation, fishing, swimming, and hunting. Four State parks plus one State Forest are in the study area.

3.177 Minnesota Canoe and Boating Route Program - Minnesota Statute 85.32 authorized the Commissioner of Natural Resources to mark canoe and boating routes and to provide recreational facilities on certain rivers, including the Minnesota, Root, Zumbro, Cannon, and Mississippi. River management activities for the Canoe and Boating Route Program focus on recreational development and land acquisition.

3.178 During 1980 and 1981, the State studied Upper Mississippi backwater areas from Anoka to the Iowa border, for possible designation into the Canoe and Boating Route Program. The study completed the canoe route map of the river and identified new canoe routes in the backwater areas. These maps include campsites, rest areas, and access sites.

3.179 Minnesota Wild and Scenic Rivers Program - Minnesota's Wild and Scenic River Act, passed in 1973, directs the DNR to protect and maintain the natural characteristics of rivers or river reaches possessing outstanding scenic, scientific, historical, or recreational value. This act is not meant to restore river areas to wilderness, but is meant to protect exceptional rivers from degradation caused by uncontrolled development and recreation overuse. Management activities in the Wild and Scenic Rivers Program include land use management, water surface use management, recreational development, and land acquisition. All land use management practices must be compatible with Shoreland and Floodplain Program regulations.

3.180 Although no river reaches in the study area are designated as wild or scenic, the Cannon and Root Rivers, which flow into the Upper Mississippi, were studied for designation.

3.181 Minnesota Scientific and Natural Areas Program - Part of Minnesota's outdoor recreation system, the Scientific and Natural Areas Program aims to preserve and perpetuate the ecological diversity of the State's natural heritage, including landforms, fossil remains, plant and animal communities, rare and endangered species, or other biotic features and geological formations, for scientific study and public education as components of a healthy environment.

3.182 The following criteria are necessary for an area to be included in the Scientific and Natural Areas Program:

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- Areas shall feature elements of natural diversity of exceptional scientific and educational value.
- Areas shall be large enough to preserve their inherent natural values and permit effective research or educational functions.

3.183 Minnesota Critical Areas Act - The Critical Areas Act of 1973 was passed to help identify areas possessing important historical, cultural, aesthetic, or natural values. The State helps local governments prepare plans and regulations for wise use of such areas. A local government or a regional development commission may recommend an area for critical area designation to the Minnesota Environmental Quality Board, which makes recommendations to the Governor regarding designation. The Governor may issue an executive order designating all or part of the recommended area as critical. The order must include specific standards and guidelines for use in preparing and adopting plans and regulations, and it must indicate what development shall be permitted pending adoption of plans and regulations.

3.184 The Upper Mississippi River in the Twin Cities metropolitan area from the Anoka-Sherburne County border to the Dakota-Goodhue County border is a designated critical area. The purposes of critical area designation in this segment of the river are:

- To protect and preserve a unique and valuable State and regional resource for the benefit of the health, safety, and welfare of the citizens for the region, State, and Nation.
- To prevent and mitigate irreversible damage to this regional, State, and national resource.
- To preserve and enhance its natural, aesthetic, cultural, and historical value for the public use.
- To protect and preserve the river as an essential element in the national, State, and regional transportation, sewer and water, and recreational systems.
- To protect and preserve the biological and ecological functions of the corridor.
- To seek input from users, local residents, and



FIGURE 3-7. The St. Paul District, Corps of Eng from small access points to large-scale intens recreation days.



Paul District, Corps of Engineers, operates and maintains a number of public recreation areas along the river. These developments range from small-scale picnic grounds to large-scale intensive park developments. In recent years, total annual recreation use on the river has exceeded 5 million.

3. FACTORS INFLUENCING DEVELOPMENT

special interest groups in decisions regarding the most suitable use(s).

- To require users engaged in scientific study to make information obtained on scientific and natural areas available to the DNR, and to encourage users to make their studies available to the scientific community.

3.185 Three Minnesota scientific and natural areas are in the study area. Table 3-14 lists these areas, their locations, and significance.

TABLE 3-14 - MINNESOTA SCIENTIFIC AND NATURAL AREAS			
Location	Site	Size	Features
Dakota Co. mile 813.5	Hastings Scientific and Natural Area	25 acres	Good example of Big Woods forest type; marsh land; a series of spring-fed ponds.
Goodhue Co. mile 784	Wacouta Scientific and Natural Area	49 acres	Peregrine falcon habitat; haven for concentrations of migrating birds; geological formations; undisturbed plant community.
Wabasha Co. mile 749.5	Kellogg River Sand Dunes Scientific and Natural Area	182 acres	Sand dunes; dry prairie on dunes habitat for three rare species; Blanding's turtle (nesting colony), yellow-fruited sedge, and Ottoe skipper butterfly.

State of Wisconsin

3.186 Wisconsin Shoreland Management Program - The Wisconsin Water Resources Act of 1965 established a joint State-local program for managing Wisconsin's water and related land resources. This act also created the State's Shoreland and Flood Plain Zoning Acts. The Shoreland Zoning Act required counties to adopt subdivision and zoning regulations for all unin-

corporated areas by January 1, 1968. Department of Natural Resources (DNR) is to adopt shoreland ordinances for those counties that fail to adopt acceptable ordinances.

3.187 This act also requires the DNR to establish standards and criteria for navigable waterway regulations and their administration:

"Such standards and criteria shall give particular attention to the safe and sound conditions for the enjoyment of water resources; the demands of water recreation; the demands of water boating and water sports; the capacity of the water resource; requirements necessary to assure proper operation of sewage disposal fields near navigable waterways; building setbacks from the water; protection of shore growth and cover; conservation of low lying lands; shoreland land use; residential and commercial development; suggested regulations and suggestions for effective administration and enforcement of such regulations."

3.188 Wisconsin Floodplain Management

The Flood Plain Zoning Act requires counties and villages in the State to adopt reasonable and effective floodplain zoning ordinances for floodplains where serious flood damage may occur. The act may assist local governments in the adoption, and administration of the floodplain zoning ordinances. If the local government fails to adopt such ordinances, the DNR can formulate an ordinance and enforce it. This act provides a uniform method of preparation and implementation of sound floodplain regulations to protect life, health, and property and to minimize economic losses.

3.189 DNR standards for such ordinances for floodplain development that would result in stage increases greater than 0.1 foot, unless action is taken. Further action may include arrangements with affected landowners to adopt ordinances in affected communities.

3.190 Wisconsin State Park System - The act requires the Wisconsin State park system to include as a State park any land that qualifies as a State park because of its scientific, historical, or geological interest. The purpose of



areas by January 1, 1968. The Wisconsin Natural Resources (DNR) is authorized to adopt ordinances for those counties failing to adopt such ordinances.

The act also requires the DNR to establish standards and criteria for navigable water protection and their administration:

standards and criteria shall give attention to the safe and healthful use of the water for the enjoyment of aquatic life; the demands of water traffic, navigation and water sports; the capability of the water as a resource; requirements necessary to the proper operation of septic tank fields near navigable waters; setbacks from the water; preservation of riparian growth and cover; conservancy uses of riparian lands; shoreland layout for residential and commercial development; and regulations and suggestions for the administration and enforcement of the standards.

Wisconsin Floodplain Management Program - The National Flood Insurance Act requires counties, cities, and villages to adopt reasonable floodplain zoning ordinances for all flood-prone areas to prevent serious flood damage may occur. The DNR encourages local governments in the development, administration of the floodplain zoning ordinance. If the local government fails to act, the DNR may promulgate an ordinance and require its adoption. This act provides a uniform basis for the development and implementation of sound floodplain management to protect life, health, and property, and to minimize economic losses.

Standards for such ordinances prohibit any development that would result in flood depths greater than 0.1 foot, unless further action is taken. Further action may include legal action with affected landowners and amended ordinances to protect affected communities.

Wisconsin State Park System - The DNR administers the Wisconsin State park system. An area may be designated a State park because of its scenery, its natural life, or its historical, archeological, or scientific interest. The purpose of the State park

system is to provide areas for public recreation and for public education and nature study.

3.191 Wisconsin Wild Resources Program - A 1973 DNR resolution established the Wild Resources System. The Wisconsin Natural Resources Board periodically evaluates DNR lands for designation into this system. The DNR also cooperates with other public agencies and interested private landowners to determine how other lands might become a part of this system or complement it. Additionally, the Wild Resources Advisory Council was formed to advise the DNR and Natural Resources Board on the identification and preservation of those areas that may qualify.

3.192 The Wild Resources System has eight categories: wilderness areas; wild areas; public use natural areas; scientific areas; Federal wild, scenic, and recreational rivers; Wisconsin wild rivers; wild lakes; and wilderness lakes.

3.193 Wisconsin Scientific and Natural Areas Program - Scientific and natural areas are areas of land or water with native biotic communities, unique natural features, or significant geological or archeological sites. Generally, natural areas have largely escaped disturbance since settlement or exhibit little recent disturbance so that recovery has occurred and presettlement conditions are approached. Scientific areas are selected from the best natural areas and set aside specifically for scientific research, teaching natural history and conservation, nature appreciation, and preservation of natural values for future generations.

3.194 Scientific areas are designated by the Scientific Areas Preservation Council, which advises the DNR and other public agencies. Natural areas are identified through inventory or, in some cases, through recommendations. These areas are then evaluated by the Scientific Areas staff and may receive preliminary council approval. For tracts in public ownership, the council negotiates dedications through management agreements. For privately-owned areas, the council encourages acquisition by either public agencies or private conservation groups. Designation is accomplished when the council adds the dedicated tract to the State list of scientific areas. Ten Wisconsin scientific areas are in the study area.

3.195 The goal of the scientific areas program is

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protection of sufficient scientific areas and other natural areas in each region of the State to preserve examples of all types of biotic communities and unique natural features native to the region. The objective of scientific area management is to preserve the area in a natural condition, with the least possible human disturbance.

Regional Planning Commissions

3.196 Iowa - Local governments in northeast Iowa have joined together in the Upper Explorerland Regional Planning Commission. Allamakee and Clayton Counties are members of this planning commission. This advisory commission prepares comprehensive studies and plans for the development of the area. Such plans may be adopted wholly or in part by member cities and counties.

3.197 Minnesota - Minnesota's regional development commissions facilitate intergovernmental cooperation and coordination of State, Federal, and local comprehensive and development planning. Development Region 10 includes Goodhue, Wabasha, Winona, and Houston Counties. The Region 10 Development Commission, which has recently been discontinued, has conducted regional land use studies and regional transportation plans that included river transportation. The commission was also active in trail development planning in the Richard J. Dorer Memorial Hardwood Forest.

3.198 To coordinate planning and development within the Twin Cities metropolitan area, the Metropolitan Council was created. A primary function of the council is to develop a long-range system policy plan for recreational open space. The council also makes grants to municipalities, park districts, and counties for recreational open space acquisition and development. The Metropolitan Parks and Open Space Commission, which advises the council, works to increase State and Federal funding for local parks and the regional recreational open space program. The council's goal is to help provide a range of recreational opportunities through the establishment and maintenance of a balanced system of local parks and regional recreational open space.

3.199 Wisconsin - Wisconsin's regional planning commissions are voluntary associations of counties that advise local governments. Regional planning commissions prepare master plans for the physical

development of their respective areas. Local governments may adopt all or any part of other planning commission programs.

3.200 The commission affecting the land in the study area is the Mississippi River Regional Planning Commission (MRRPC). The commission includes Pierce, Pepin, Buffalo, Trempealeau, Vernon, Monroe, and Crawford Counties. Engineers locks and dams are in this river.

3.201 The MRRPC's comprehensive plan was adopted in 1972. To implement this plan, the commission conducts a variety of local assistance programs including preparation of base maps, and zoning maps; advocacy of local interests; helping communities prepare plans necessary to obtain State and Federal development aids; and other services. The MRRPC has helped prepare land use plans, and development policies for each of the counties. Although most MRRPC activities are at local governments, the MRRPC also sponsors river projects, including review of local actions. The MRRPC also helps local governments meet Federal and State requirements regarding river activities. The La Crosse Area Planning Commission (LAPC) coordinates planning activities in the La Crosse area. The LAPC is the Commission's policy and planning activities in the La Crosse area.

3.202 Grant County is a member of the Wisconsin Regional Planning Commission. The planning commission published a recreation and open space program as part of the region's Comprehensive Planning Program. Activities of the commission include outdoor recreation plans, land use plans, historical site inventories; and providing technical assistance to local governments on financial aid for park and recreation improvement.

3.203 The St. Croix County/Community Development Plan and a land use study for St. Croix County were developed by the West Central Wisconsin Planning Commission.

County and Local Agencies

3.204 County and municipality outdoor recreation and zoning ordinances also influence



er respective regions. Local
all or any part of the plans and
sion programs.

affecting the largest portion of
e Mississippi River Regional
(MRRPC). The MRRPC includes
alo, Trempealeau, La Crosse,
awford Counties. Eight Corps of
ms are in this region.

mprehensive plan document was
implement this plan, the MRRPC
local assistance programs. Such
aration of base maps, land use
; advocacy of its communities'
mmunities prepare the paperwork
State and Federal planning and
other services. In addition,
prepare land use plans, policy
policies for each of its member
t MRRPC activities are directed
the MRRPC also reviews Corps
uding review of recommended
so helps local governments meet
irements regarding its planning
rosse Area Planning Committee
ning activities with the MRRPC.
sion's policy advisory body on
the La Crosse urban area.

a member of the Southwestern
ning Commission. In 1980, this
published a regional outdoor
space program as part of the
e Planning Program. Other
ission include preparing county
plans, land use surveys, and
ries; and providing information
n financial aid available for
rovement.

ty/Community Outdoor Recrea-
se study for St. Croix County
est Central Wisconsin Regional

ality outdoor recreation plans
also influence recreation

development and management along the Upper Missis-
sippi. A county or city recreation plan guides
development of specific recreational programs and
long-range objectives. Additionally, it addresses
recreation-related issues and establishes policies.
Through examination of the issues and demand-supply-
need analysis, such plans make recommendations to
achieve the recreation objectives of the county or
city. Table 3-15 shows counties and cities in the
study area known to have outdoor recreation plans.

TABLE 3-15 - COUNTIES AND CITIES IN THE STUDY AREA
WITH OUTDOOR RECREATION PLANS

Counties	Cities
<u>Minnesota</u>	<u>Minnesota</u>
Dakota	Bloomington
Houston	Savage (Comprehensive Plan)
Ramsey	Stillwater
	Lakeland
<u>Wisconsin</u>	St. Paul
	South St. Paul
St. Croix	Cottage Grove
Pierce	Newport (Comprehensive Plan)
Pepin	Eagan
Buffalo	Hastings
Trempealeau	Red Wing
La Crosse	Lake City
Vernon	Winona
Crawford	
Grant	<u>Wisconsin</u>
	North Hudson
	La Crosse
	Stoddard

3.205 Although land use controls are a State responsi-
bility, the States in the study area have delegated
implementation and enforcement of such controls to
local governments. The enabling legislation
established guidelines, rules, and regulations that
local land use control ordinances must meet. The
States retain authority to act where local units fail
to adopt or enforce the State-approved ordinances.

3.206 Generally, floodplain districts are formed by
counties or municipalities that control the land
inundated by the regional flood (a flood with a

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1-percent chance of occurring any given year). A floodplain district includes the floodway and the flood fringe. The floodway includes the river channel and parts of the adjoining floodplain required to carry and discharge the regional flood. The flood fringe consists of floodplain areas outside the floodway still subject to the regional flood.

3.207 Open space uses that have low flood damage potential and that do not obstruct flood flows are permitted within the floodway. Acceptable recreational uses include golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, boat-launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, fish hatcheries, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, recreational trails, marinas, and boat rentals. Structures related to permitted open space uses are allowed under the following restrictions:

- The structures are not designed for human habitation.
- The structures have low flood damage potential.
- The structures are built and placed on the site so that they offer minimum obstruction to the flow of floodwaters. Whenever possible, a structure should be built with the longitudinal axis parallel to the direction of flow of floodwaters and placed on approximately the same flood flow lines as those of adjoining structures.
- The structures are flood-proofed.
- The structures have all service facilities, such as electrical and heating equipment, at or above the flood protection elevation for that particular area.

3.208 Virtually all uses permitted by existing zoning ordinances are allowed in the flood fringe as long as structures are elevated on fill or are flood-proofed to 3 feet above the regional flood elevation.

3.209 Detailed information on local floodplain and shoreline development programs in Iowa, Minnesota, and Wisconsin is in the discussion of the individual State programs. In Iowa, local governments may adopt floodplain development ordinances. Iowa Natural

Resources Council (INRC) permit construction in floodplain and State-approved local ordinances. Counties and municipalities adopt and enforce floodplain ordinances. If the local government does not, the DNR may adopt an ordinance for unincorporated shorelands, and the DNR may adopt appropriate ordinances. If local governments issue land use permit ordinances, local governments must adopt flood management ordinances in accordance with the standards. If local government programs, the Wisconsin DNR may adopt appropriate ordinances.

3.210 Both Minnesota and Wisconsin governments to protect the Lower Mississippi River, Chapter 104.25, authorizes the DNR to provide for management and development of the National Scenic Riverway. Chapter 104.25 authorizes the DNR to establish standards for local zoning of the banks, bluffs, and bluffs. Such standards include residential, commercial, and industrial uses, as prohibition of issuance of such uses are inconsistent with the National Scenic Riverway. The establishment of acreage, requirements. Counties and municipalities must adopt zoning ordinances with the standards and guidelines may not be modified without DNR approval.

3.211 Counties and cities in the flood fringe are listed in table 3.211.



(INRC) permits are not necessary for floodplain areas that comply with a local ordinance. Minnesota requires municipalities with adequate data to have floodplain management ordinances. If a government does not act, the Minnesota Department of Natural Resources must zone shorelands, and municipalities must have floodplain ordinances. Local zoning administration use permits. In Wisconsin, local governments must adopt floodplain and shoreland management ordinances in accordance with State law. Local governments do not adopt such ordinances. Wisconsin DNR may formulate and enforce

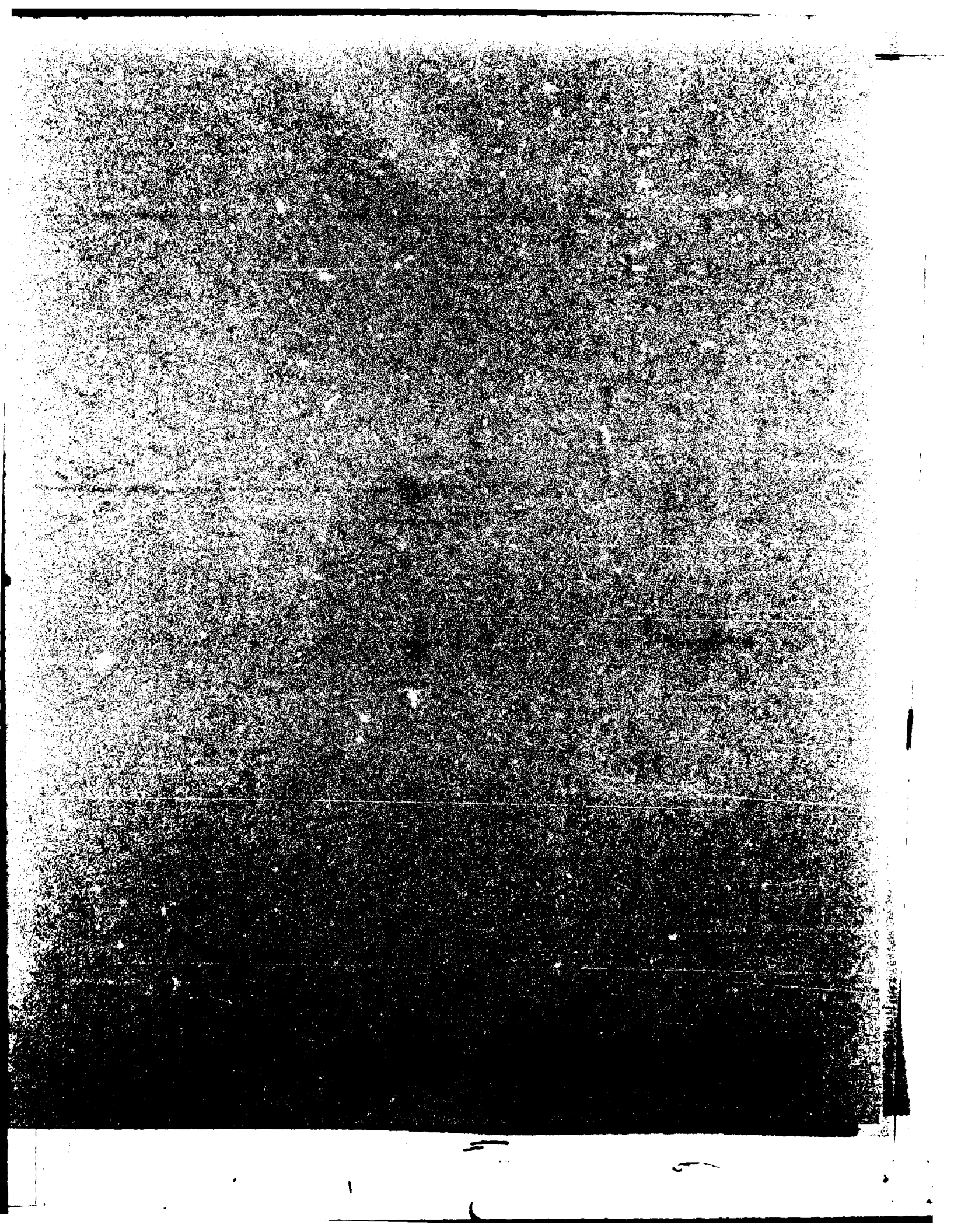
Minnesota and Wisconsin require local governments to protect the Lower St. Croix. Minnesota Statute 104.25, authorizes the Commissioner of Natural Resources to provide standards and criteria for the development of the Lower St. Croix Riverway. Chapter 30.27 of Wisconsin Statutes requires the DNR to adopt guidelines and local zoning ordinances that apply to floodplains, and bluffs of the Lower St. Croix Riverway. The standards include prohibition of new commercial, and industrial uses, as well as issuance of building permits where inconsistent with the purpose of the Riverway. The standards also include setbacks of acreage, frontage, and setback for municipalities and municipalities affected by the Riverway. Such ordinances must be adopted without DNR approval.

and cities in the study are with zoning ordinances listed in table 3-16.

TABLE 3-16 - COUNTIES AND CITIES IN THE STUDY AREA WITH ZONING ORDINANCES

Counties	Cities		
	Minnesota	Wisconsin	Iowa
Washington	Stillwater	North Hudson	Harpers Ferry
Scott	Bayport	Hudson	McGregor
Dakota	Lakeland	Prescott	Guttenberg
Chisago	Afton	Bay City	
Goodhue	Savage	Maiden Rock	
Wabasha	Bloomington	Stockholm	
Winona	Burnsville	Pepin	
Houston	Minneapolis	Alma	
	St. Paul	Buffalo	
<u>Wisconsin</u>	Mendota	Fountain City	
	Eagan	Trempealeau	
St. Croix	Lilydale	La Crosse	
Pierce	South St.	Stoddard	
Pepin	Paul	Genoa	
Buffalo	Newport	DeSoto	
Trempealeau	Inver Grove	Ferryville	
La Crosse	Heights	Lynxville	
Vernon	St. Paul	Prairie du	
Crawford	Park	Chien	
Grant	Rosemount	Bagley	
Polk	Cottage	St. Croix Falls	
	Grove	Osceola	
<u>Iowa</u>	Hastings		
	Red Wing		
Allamakee	Lake City		
Clayton	Wabasha		
	Winona		
	La Crescent		
	Lake St. Croix Beach		
	St. Mary's Point		
	Oak Park Heights		
	Marine on the St. Croix		

PART II - 1. AREA OF RELOCATION PLAN



4. PLAN FORMULATION

LAND ALLOCATION OBJECTIVES AND THE PLANNING PROCESS

Introduction

"All Civil Works water resource project land will be allocated to provide for sound development and resource management practices consistent with authorized project purposes and the intent of the provisions of the National Environmental Policy Act of 1969, Public Law 91-190. Land allocation is highly selective based on its highest and best use."

4.01 The preceding statement is taken from Engineer Regulation (ER) 1120-2-400 (Investigations, Planning and Development of Water Resources: Recreation Resource Planning), the primary source of land use allocation guidance for the Corps of Engineers.

Determining the "Highest and Best Use"

4.02 The following section describes the management factors that greatly influence the St. Paul District's ability to manage the Upper Mississippi River for this "best use." The next section provides an overview of the planning process, including a brief description of the data base used for making allocation decisions. These data were combined with information obtained through extensive coordination efforts with other agencies and from a series of public workshops and formal meetings. This information is intended to provide a better understanding of the process used to develop this plan.

4.03 The determination of "highest and best use" of Federal lands managed by the St. Paul District along the 9-foot navigation channel is the primary objective of this land use allocation plan. The following major factors influenced this determination of "best use" for these Federal lands:

- Federal laws and regulations that place priority on navigation, above other project public uses.
- The great size and scope of the study area, and its multiple uses.
- Past and present Federal land management practices and arrangements with other government agencies and the using publics.

- Limited Federal manpower, support planning and management.
- Limitations of Corps of Engineers authorities for public recreation services.
- Limitations imposed by limited data.
- The need for resolution of conflicts with the U.S. Fish and Wildlife Service (FWS) in reviewing and approving use activities on Cooperative Lands.
- The need for identification of objectives for current and material disposal areas to provide guidance to the St. Paul District Branch and the GREAT I implementation team.
- The need for clear plan to facilitate a follow-up study management plan to be included in operational management plan.
- The need for ongoing Corps of Engineers Upper Mississippi River resource channel maintenance action management decisions involving licenses and regulatory permits.

The Planning Process — An Overview

4.04 Data Base - To gain a comprehensive understanding of river resources, Corps planners examined, in some cases, updated background baseline analysis. The following are the essential direction for the planning decisions:

- Review of existing Federal land management commitments.
- This review included all existing use licenses, real estate land use commitments.
- Recreation demand-supply-needs.

The GREAT I recreation



deral manpower, time, and money to
nning and management.

of Corps of Engineers implementation
for public recreation and associated

imposed by limited resource and user

or resolution of resource management
with the U.S. Fish and Wildlife
S) in reviewing and approving public
ies on Cooperative Agreement lands.

or identification of land management
for current and proposed dredged
disposal areas to provide operational
the St. Paul District Maintenance
the GREAT I implementation planning

for clear planning criteria to
a follow-up shoreline (lakeshore)
plan to be included as part of the
management plan.

or ongoing Corps involvement with
Mississippi River resources centering on
aintenance activities and land
decisions involving real estate
d regulatory permits.

s — An Overview

To gain a comprehensive knowledge of
Corps planners extensively reviewed
, updated background material for a
s. The following items provided
tion for the land use allocation

Existing Federal land use arrange-

view included all existing special
s, real estate leases, and similar
mitments.

demand-supply-needs analysis.

GREAT I recreation demand methodology

was modified slightly, and 1980 census data were
incorporated to generate new recreational demand
estimates and related resource requirements.

Many coordination meetings and mailings to
Federal, State, county, and local agencies were
used to update the GREAT I recreation facility
inventory.

The recreation resource needs estimates were
determined by subtracting existing inventories
from estimated resource requirements, based on
the new recreation demand figures.

- Computerized Geographic Information System (GIS)
analysis.

The GIS data base, prepared for the FWS and
GREAT I, was used to generate recreation
activity area models and fish/wildlife
suitability models. These models helped
identify and evaluate degrees of suitability of
Federal lands for such activities as camping,
beach use, picnicking, boat launching, and trail
use. They also identified fish and wildlife
values.

- Field analysis of current recreation use
patterns.

Field personnel from the Corps, the FWS, and
the States of Iowa, Wisconsin, and Minnesota
helped identify areas along the river that they
felt should be recognized within this study.
These areas included existing recreation use
sites, important fish and wildlife habitat
areas, and proposed commercial navigation
structures, etc.

- Resource inventory.

Stereo aerial photography of the river and
adjacent shorelines was used to check for
vegetation or land use changes identified in the
1973 river vegetation analysis conducted by Dr.
Myers of the University of Minnesota.

4.05 These data, when combined with information from
such previous river studies as GREAT I and the Upper
Mississippi River Basin Commission master plan,
provided an incomplete but extensive resource base.

4. PLAN FORMULATION

4.06 A final step in the data base process was summarizing this information on resource maps. Several map scales were necessary to display the data. A set of new real estate maps that showed boundaries of Corps and FWS lands was developed as part of this data collection.

4.07 Team Approach - After the data base was developed, the next step was to form an interdisciplinary team of Corps resource specialists and planners. This step was accomplished early in fiscal year 1980. At that time, efforts were begun to conduct archeological and historical investigations, an inventory of private commercial enterprises along the river, a social institutional analysis, a summary review of environmental studies, a visual impact methodology study, and other related studies. These studies provided the planning team landscape architects, biologists, sociologists, archeologists, resource managers, outdoor recreation planners, and other team members with much of the information that was summarized and evaluated during a series of District team meetings. These meetings were used to prepare an initial set of land use allocation definitions and a rough land use allocation plan.

4.08 Changes to Planning Schedule - Changes in the availability of human and financial resources required several revisions in the planning schedule after the master plan update was initiated in 1980. The loss of supporting staff forced an unexpected shift in the project: the master plan was divided into three parts. Parts I and II (this report) provide the background data used for the master plan and the land-use allocation process. Part III (plan for development) will include site designs for Corps-managed or leased recreation sites as well as discussions and recommendations for a variety of river-related public use issues. Part III is scheduled for completion by 1985.

AGENCY COORDINATION EFFORTS

4.09 Throughout this study, the St. Paul District has worked closely with the U.S. Fish and Wildlife Service (FWS). This coordination has resulted in a greater appreciation of each agency's role in managing the resources under its jurisdiction and the realization that the two agencies can work cooperatively to improve management programs. This coordination made possible the development of a land use allocation plan jointly prepared and supported by both agencies.

4.10 Following preparation of the first house draft land use allocation maps, District and the FWS met to identify and management conflicts. Intensive discussion, negotiation, and compromise modified version of the land use allocation. Most land use conflicts were resolved in meetings, with the exception of identifying appropriate categories for strips of Federal land currently support extensive private structures. Initially, it was not possible to allocate appropriate management categories because existing Corps policy on private land not sufficiently detailed. Following coordination within the St. Paul District, a restatement of policy was provided and allocations were completed.

4.11 The States of Iowa, Minnesota, and Wisconsin have vested interests in the management of the Corps and the FWS (General Planning and coordination requirements). Consequently, involvement was sought at each major step in the land use allocation process. Each State participated in the study process, and site-specific information was obtained from various field offices. Coordination meetings were held in January to present the preliminary land use allocation maps to each State. Formal review of the draft maps was requested, and comments received were incorporated during preparation of the final draft land use allocation plan.

4.12 The Corps and the FWS jointly prepared revised land use allocation maps to the States of Minnesota, Wisconsin, and Iowa through the natural resource management agency. The maps were reviewed and provided comments at the State meetings, a series of public workshops were held in communities along the river in August. (See the following Public Involvement section for further details).

4.13 The Minnesota-Wisconsin Boundary Area has also been given opportunities to continue the study and has been briefed on its scope. The commissioners have been briefed at the time of the formulation of the land use allocation plan.

4.14 After collecting and reviewing the comments from various State and local agencies and the public, the Corps met with the FWS to determine what modifications were needed in the draft land use allocation plan.



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location maps, the St. Paul
to identify and resolve land
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and compromise resulted in a
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were resolved during these
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nd site-specific information
us field offices. Additional
were held in July 1982 to
land use allocation plan to
view of the draft plan was
ts received were considered
f the final draft land use

e FWS jointly presented the
ation maps to the States of
nd Iowa through each State's
ent agency. The three States
provided comments. Following
eries of public workshops was
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onsin Boundary Area Commission
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fed on its scope and status.
een briefed at key points in
and use allocation plan.

d reviewing the comments from
l agencies and the general
th the FWS to determine where
eded in the draft land use

4.15 Minor modifications to the preliminary land use allocation maps presented to the public in August 1982 were made after a ground-truthing exercise conducted by Corps and FWS staff. Using recently obtained aerial photography and on-site visits, the field staff recommended minor changes. At a follow-up FWS/Corps coordination meeting, recommended changes were discussed, negotiated, and approved.

4.16 The recommended changes were incorporated and the draft report was printed. Problems associated with the quality of work produced by the contract printer delayed report distribution from late fall to winter 1983.

4.17 Approximately 4 weeks after distribution of the printed draft report to public agencies and to public libraries in river communities, the Corps and the FWS scheduled a series of formal public meetings in January 1983. The Corps and the FWS obtained many public comments and statements during and after these meetings. Further discussion of the comments and the changes made in the draft plan in response to these comments is in the following section (Public Involvement Program).

4.18 One major revision in the draft report involves the land use allocations for FWS-managed lands. The draft plates showed these allocations by symbols. The revised plates now show both Corps and FWS allocations with a single color code, but with screened half-tones to distinguish the FWS-managed lands. Other changes are also noted in the following report section.

PUBLIC INVOLVEMENT PROGRAM

General Public Involvement Activities

4.19 The Corps has made continual efforts to incorporate public opinion throughout this master planning process. The Corps hired a consultant to help design and implement the master plan public involvement program. This program has included joint Corps/FWS public presentations, workshops, and meetings.

4.20 The first series of four public involvement meetings took place in November 1980, in St. Paul and Wabasha, Minnesota, and in La Crosse and Prairie du Chien, Wisconsin. These workshops informed the general public about the scope of the master plan

2

4. PLAN FORMULATION

study. Public comments about the key issues that the plan should address were also recorded at these meetings. Early in 1981, meeting participants received a mailed summary of identified and ranked issues.

4.21 The FWS and the Corps jointly sponsored a series of open-house meetings in summer 1981. Three informal meetings in Hastings and Winona, Minnesota, and Lansing, Iowa, were augmented by a formal public meeting in La Crosse, Wisconsin. The basic purpose of these meetings was to inform the public of the progress on the master plan. At the request of a Congressman, the La Crosse meeting was added to deal with public issues specific to the Lake Onalaska area. At each meeting, the public was given opportunities to identify concerns and issues related to the planning objectives.

August 1982 Workshops

4.22 The FWS and Corps jointly sponsored an additional series of public workshops during August 1982 in Red Wing and Winona, Minnesota; Onalaska, La Crosse, and Prairie du Chien, Wisconsin; and Lansing, Iowa. The Corps informed the public of its intent to separate the master plan into several parts.

4.23 The workshops were publicized by announcements in local newspapers and radio stations. Also, approximately a month before the meetings, a special newsletter that summarized planning efforts was distributed to about 4,000 addresses. Although public attendance at the workshops was less than expected for locations along the upper reaches of the river (Red Wing and Winona, Minnesota; La Crosse, Wisconsin), the more southern locations had larger turnouts. Approximately 350 people attended the six workshops.

4.24 At these workshops, the public focused on the preliminary draft set of land use allocation maps and on the private special use issue. Both agencies realized that a further policy interpretation of their current positions on private use of Federal lands was necessary to complete the land use allocation study. Such a position was not formulated before these meetings. Lacking this position, the Corps and FWS informed the public of their intent to formulate a joint position on private use, and these two agencies presented various policy options that were being considered. The public had the opportunity to express their comments and concerns about these matters.

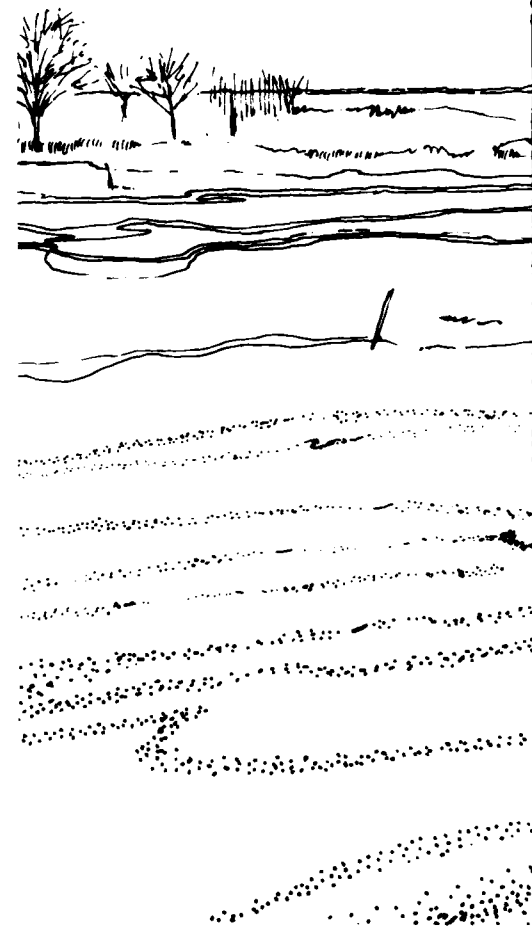


FIGURE 4-1. The objective of Corps natural resource base without harm to the ecology. The carrying functional values. The Mississippi River project sound resource management.



of Corps natural resource management activities is the continued enjoyment and maximum sustained public use of the natural resource ecology. The carrying capacity of the land is determined on a site-by-site basis, using biological, aesthetic, historical, and Mississippi River project area contains a vast mix of various land types. Ongoing management efforts continue to be directed toward t.

4. PLAN FORMULATION

4.25 The workshops included brief presentations on the master plan study by FWS and Corps representatives. After these presentations, the public separated into small groups where discussion facilitators and recorders obtained public input. Following the workshops, public comments obtained at the meetings or through the mail were compiled according to meeting location. Both agencies reviewed these comments and grouped the comments into several categories which are further discussed below.

4.26 At a special joint meeting, both agencies further reviewed public comments that might be incorporated into the revised draft land use allocation maps. Review of the public comments recorded at the workshops and those mailed in later indicated that most of the public concern focused on the related problems of soil erosion and resulting river sedimentation, backwater filling, and increasing rates of vegetation growth.

4.27 Other central issues identified at most of the workshops include (not listed by priority):

- Bank erosion and backwater sedimentation problems perceived to be associated with barge traffic.
- Negative impacts of pool-level fluctuations.
- The need to improve water quality.
- More public education and information about issues such as boat safety, litter, and river recreation resource locations.
- The decrease in available sand beaches and sandbars for recreation uses.
- A need for greater management authority to deal with enforcement of regulations.
- Protection and enhancement of fish and wildlife resources.

4.28 Several local issues also surfaced in various communities. For example, concerns about future water quality, sedimentation, aquatic vegetation, and recreational use of Lake Onalaska were discussed at length during the Onalaska and La Crosse, Wisconsin, workshops. Barge-fleeting impacts and regulatory controls were sensitive issues for those attending the meeting at Lansing, Iowa.

4.29 Most of the public comments in terms of subject matter and identification were unrelated to the current FWS and Corps studies. Various comments supported private-use questions.

4.30 All public comments identifying site-specific recommendations that allocations were studied carefully, changes were made in the draft land maps.

January 1983 Formal Public Meetings

4.31 The draft land use allocation plan was presented at a public meeting in November 1982, following the changes to public comments from the August meeting. The draft report was then sent to public libraries, community and institutional libraries, and made available to the public.

4.32 Public notices were distributed for three formal public meetings scheduled for the week of January 1983, that were held in Iowa; La Crosse, Wisconsin; and Lansing, Michigan. At each of these meetings, there were breakout sessions facilitated through the Minnesota Boundary Area Commission. These provided an opportunity to ask agency planners questions informally prior to the meeting. These meetings were well attended. A meeting record was prepared for each meeting. Copies of the transcript were made available to about 15 public libraries along with the names of interested parties who requested them. In addition, of the public, the District Engineer extended the normal 30-day open public comment period for the meetings to 60 days, until March 15, 1983.

4.33 The majority of public comments were generated at the meetings, as well as most of the controversy to be generated by special interest groups objected to the Corps and FWS private/special-use licensing of Federal lands of the existing permit holders who



the public comments were diverse in matter and identified many issues. Current FWS and Corps master planning comments supported both sides of the issues.

Comments identifying area-specific or recommendations that affect land use were studied carefully, and appropriate changes were made in the draft land use allocation plan.

Public Meetings

The land use allocation plan was printed in response to the changes made in response to comments from the August 1982 workshops. The plan was then sent to public agencies and institutional libraries where it was available to the public.

Comments were distributed for a series of public meetings scheduled for the second half of 1983, that were held in Winona, Minnesota; and Lansing, Iowa. Before the public meetings, there were informal open house sessions through the Minnesota-Wisconsin Boundary Area Commission. These provided the public an opportunity to ask agency planners questions before the meeting. These meetings were held on a regular basis. A meeting record was made for each meeting. Copies of the transcripts were sent to public agencies along the river and to institutional libraries where requested. At the request of the District Engineer, the public comment period following the meetings was extended until March 15, 1983.

A majority of public comments at these meetings, as most of the controversy, appeared to be from special interest groups. These comments were directed to the Corps and FWS position on the licensing of Federal lands. Many permit holders who attended the

meeting felt that discontinuing the transferability of special-use licenses in January 1990 would negatively affect the value of their properties. There is evidence that some opposition groups even helped create public confusion about the management actions proposed by the Corps and the FWS. Both agencies were accused of wanting to close the river off to public use. A series of widely distributed media announcements and newsletters was necessary to correct the misinformation that was causing public confusion. These newsletters and news releases explained the management goals of both agencies (that the real intent of the plan is to enhance public use and wildlife production, and that the plan would not restrict public use or access).

4.34 By the end of the public comment period on March 15, 1983, many constructive comments and recommendations had been received from various government agencies, river interest groups, and involved citizens.

4.35 Many commenters indicated a desire to see what changes were made to the LUAP as a result of comments. All individuals, groups, and agencies who provided statements at public meetings or who made written comments during the open comment period received individual letters of response from the St. Paul District Engineer, Colonel Edward G. Rapp. These letters explained how the commenter's specific comments would be incorporated into the revised LUAP. In addition, a newsletter was jointly prepared by the Corps and FWS. This newsletter was widely distributed to provide the public with an update on LUAP progress plus a summary of responses to the comments received from individuals (included in this report as figure 4-2). These summary comments are included in this report to give the reader a sense of the public concerns expressed at the public meetings or during the open comment period that followed the public meetings.

4.36 Formal comments were also received from all three State conservation or natural resource departments, the Lake Onalaska Protection and Rehabilitation District, and the Minnesota-Wisconsin Boundary Area Commission. Individual letters responding to their comments were prepared and mailed in July 1983.

4. PLAN FORMULATION

4.37 These letters and the associated St. Paul District responses, along with additional public involvement materials, have been compiled in a supplementary document (to be published separately) entitled Public Involvement and Agency Coordination in the Land Use Allocation for the Upper Mississippi River. This document on public involvement will be a complete compilation of correspondence that shows the process of public involvement and coordination related to the LUAP between the Corps and other agencies. This document will also contain all the public announcements (such as public notices, newsletters, and news releases). It will also contain all comments from agencies plus the Corps responses to their comments. The document will be available to the public at little or no cost and will be sent to local libraries after it is completed.

Comment Topic (Reference*)

Resulting Change or Reason for No Change

I. Private Use Licensing Policy

- A. Keep policy same as before the plan
(5.03-5.09) (4.27-4.30)

Both the Corps and FWS have determined that the approximately 23 shoreline miles of Federal lands currently used to support individual private recreation structures should be returned over time to public use. Special private use of Federal land is becoming increasingly less appropriate and is not in the best public interest. Because Federal land resources continue to receive greater pressure for public use, all available Federal land along the river will be needed to help meet future public use demands. Community docks are encouraged as an alternative means to meet boat-mooring needs.

- B. Make policy stronger by cutting off
all permits within 10 years (5.03-
5.09)

The Corps and the FWS continue to support the grandfathering policy in order to maintain their commitment to existing license holders. Existing license holders have invested in the purchase, construction, or improvement of private recreation structures on the basis that the Government would honor its present policy of renewals. The public demand for use of Federal shorelines is also not expected to peak in 10 years but will continue to grow slowly as the population expands and private shoreline development increases.

- C. The Corps should allow land exchanges -
similar to FWS (4.27)

Lands were acquired by the Corps on the Upper Mississippi River system for construction and operation of the 9-foot navigation channel. The Corps, therefore, has less flexibility to exchange lands than the FWS.

- D. Increase 15-percent limit for maximum
annual repairs (4.27, 5.03-5.09)

Consideration has been given to the possibility of increasing the maximum allowable percentage of fair market value that can be spent each year to maintain or repair licensed private structures. Such a change can be authorized only through approval of higher authorities. Tentative approval to increase the maximum limit from 15 percent has been received. The new limit is 25 percent of the fair market value. Since the grandfathering policy is not scheduled to take effect until 1990, dock owners will have the opportunity to convert to floating docks, which would be less susceptible to damage.

FIGURE 4-2.



Summary of Findings

Key Findings of Research for the Future

1. The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.
2. The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.
3. The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.
4. The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.
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The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.

4. Major Findings: The study is a preliminary investigation of the problem of water pollution in the Mississippi River Basin.

FIGURE 4-2. Continued on next page

4. PLAN FORMULATION

Comment Topic (Reference*)	Resulting Change or Reason for No Change	Comment To
	compatible with wildlife. Designated portions of such lands have been reserved as waterfowl sanctuaries ("closed areas") during migration periods, thereby limiting hunting and trapping. Limited developments such as boat landings, access roads, trails, and parking areas are facilities that may be compatible with this allocation.	
B. Use time of year land allocation zoning (5.10-5.12)	The Corps has carefully examined the possibility of using time management restrictions or land allocation zoning on Corps lands. This technique would be of value only if restrictions were placed on recreation use and access. Additional public use restrictions on Corps lands would not be consistent with the objective of the LUAP to allow year-round traditional recreation use on practically all Federal lands along the Upper Mississippi.	
C. Strengthen language in wildlife management definition to protect integrity of wildlife values (4.27-4.30, 5.10)	The FWS has determined that existing public recreation use levels do not threaten present wildlife habitat values. If refuge lands come under enough pressure from increased public use and become unable to provide for wildlife needs, the Corps and the FWS will work with the public to make resource management adjustments necessary to protect the wildlife habitats. If future restrictions on use are necessary, river users will have adequate opportunities to contribute their ideas before any change in management is implemented.	IV. Planning Issues (4
D. LUAP should include restrictions on commercial navigation (1.05, 4.27)	The Corps has no authority to restrict barge traffic. Factors that place growth limitations on the barge industry are the physical constraints of the lock structures, the economic realities of the cost of fuel, the need to use more efficient power systems, and the competition of alternative forms of transportation.	A. Want review
E. LUAP should identify existing and future locations for industrial and commercial uses (3.113, 4.27-4.30)	The LUAP is not the appropriate vehicle to deal with this issue. Studies such as the interagency GREAT I study and the Upper Mississippi River Basin Commission master plan are intended to serve that broader planning function. The LUAP focuses on Federal land uses for public recreation and for fish and wildlife.	B. Combi (Prefa
	The revised LUAP includes the following guidance regarding future commercial or industrial uses:	
	The land use allocation plan does not identify Federal lands that may be needed for future uses which are not part of the Corps or FWS missions. Examples of such uses are utility lines, pipelines, roads, power plants, industrial sites, river terminals, and barge-fleeting areas. However, it may be necessary to accommodate such uses on Federal lands.	
	Federal lands may be made available if there is a documented "public" need, if there is no reasonable alternative on non-Federal land, and if the intent of this allocation plan is considered.	
	Requests for commercial or industrial uses will be considered on an individual basis, using laws, regulations, established policies (see pp. 13-18), and the LUAP to determine the compatibility of a proposed use. Sensitive or valuable resource areas	C. Add n progr (Prefa

FIGURE 4-2.

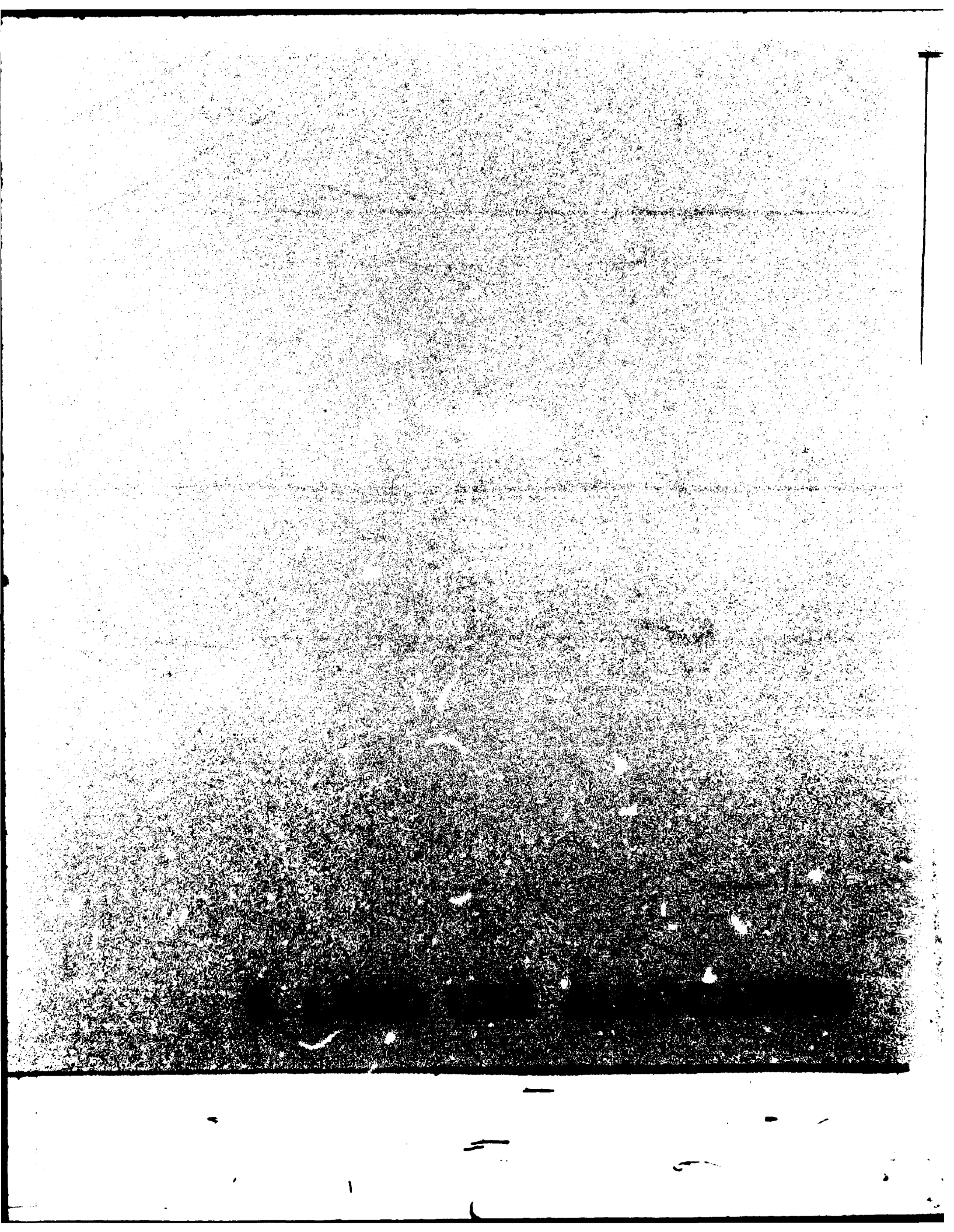


Comment Topic (Reference*)

Resulting Change or Reason for No Change

	<p>will be protected and avoided in the siting process.</p> <p>Unavoidable losses of recreational opportunities and of fish and wildlife habitat that would result from future commercial development of Federal lands would be calculated for replacement and, when applicable, treated as a cost of the project to the developer.</p> <p>The above guidance would also apply to requests for renewal of existing permits or leases. The Corps will continue leasing Government land through use of a bidding process when conditions so warrant. All permits must be consistent with State and local laws, rules, and ordinances on shoreline and floodplain management.</p>
IV. Planning and Public Involvement Planning Issues (4.08, 4.16, 4.27)	The Corps and the FWS have held three series of public workshops (1980-1982) in addition to the formal public meetings in January 1983. Coordination meetings were held with State and regional planning agencies, and a number of presentations were made to special interest groups. Several newsletters and a number of news releases kept the public informed.
A. Want additional public meetings to review and comment on plan (4.16-4.30)	The workshops, newsletters, news releases, public meetings, and other parts of the public involvement program conducted by both Federal agencies provided interested parties with ample opportunity to learn about and comment on the draft LUAP. Corps public involvement policy requires collection of data from the public and appropriate government agencies. This policy also requires that the public/interagency review comments on a draft plan be evaluated and incorporated as appropriate. These requirements have been more than adequately accomplished.
B. Combine the Corps and FWS master plans (Preface, 4.27, Recommendations)	The revised LUAP shows allocations on Fish and Wildlife Service lands more clearly than did the draft LUAP. Both the St. Paul and Rock Island Corps Districts and the FWS are working together so that the revised LUAP is consistent with future master plan studies of both agencies. The FWS refuge master plan will balance habitat management and recreation for wildlife management-allocated lands while the Corps will focus its remaining master plan studies upon site plans for intensive recreation sites and upon various recreation aspects associated with GREAT I implementation. (Corps and FWS policies require that separate agency master plans be submitted, consistent with agency planning guidelines.)
C. Add nature interpretation and education programs (Preface, 4.27, Recommendations)	The scope of the LUAP is limited to determination of appropriate public uses of Federal lands, primarily for fish and wildlife and for recreation. Part III of the Corps master plan (plan of development) will address the need for a coordinated program of interpretive services and activities at appropriate Corps facilities. This will include an examination of visitor interpretive facilities at all Corps locks and dams. (New interpretive structures have recently been designed for construction at lock and dam 1.)

* These numbers refer to those sections in the draft LUAP that have been changed in response to public comments.



5. LAND USE ALLOCATION

POLICY CONSIDERATIONS

Introduction

5.01 This section provides an overview of the major factors involved in the formulation of the land use allocations shown on the plates in section 9. Definitions of each land use allocation plus supporting information clarify the management objectives associated with each allocation. The last part of this section describes the allocations in each pool.

5.02 This land use allocation plan had to be developed within the scope of existing policy and in consonance with stated national policy directives. The following statements provide general guidance for the plan of development and future management arrangements.

- Corps of Engineers management activities will be directed towards fostering a balance between the economic, environmental, and recreational demands on the Upper Mississippi River within constraints of the two primary Federal purposes of the river (navigation and fish and wildlife) and recognizing the multi-use, multi-purpose character of the resource.

- Allocation of public lands for private recreational use will be consistent with the intent of current Federal resource management policies and stated policies to take effect in the planning horizon. Generally, use of Federal lands should foster public (community) use rather than private, special use.

- Major portions of land parcels purchased by the Federal Government along the river are submerged (below normal pool levels) as a result of construction and operation of the navigation project. To the degree possible, these submerged lands will be treated in a manner consistent with adjacent land use allocation designations in terms of permit applications for non-federal uses. For example, a permit for a barge-fleeting area may be viewed differently if the proposed location were adjacent to lands allocated for project operations than it would be if the location were adjacent to lands allocated for wildlife management.

- The plan of development (to part III of the master plan) with transfer of management responsibility for wildlife lands within the boundary of the State Park to the State policy would allow more effective management units for the State.

- Commercial activities will be considered appropriate on Federal lands within the jurisdiction of this land plan. However, instances may arise where a commercial activity is on Federal lands. Such activity will be evaluated on a case-by-case basis and will require an established permit and lease mechanism.

- The Corps and FWS recognize the need for jointly planned and fully-coordinated management of Federal lands covered under the agreement. This plan will lay the basis for further joint action.

- Management programs established for District for lands and water within the jurisdiction will be consistent with the following established environmental management objectives for the Corps of Engineers:

To preserve unique and important natural, aesthetic, and cultural resources and national heritage.

To conserve and use wisely the natural resources of our Nation for the benefit of present and future generations.

To enhance, maintain, and improve the natural and man-made environment, its productivity, variety, and beauty, and other measures.

To create new opportunities for people to use and enjoy the river.

5.03 Both the Corps and the FWS recognize an important management issue that will be addressed by this master plan: the need for a clear definition of the Upper Mississippi River National Fish and Wildlife Refuge. The FWS wishes to have management authority over all Federal lands within the refuge boundary.



an of development (to be published as of the master plan) will consider the of management responsibility of Federal lands within the boundaries of a State area or State Park to the State. This could allow more effective and efficient units for the State.

cial activities will generally not be ed appropriate on Federal land within sdiction of this land use allocation owever, instances may arise where the id alternative for this justifiable is on Federal lands. Such instances evaluated on a case-by-case basis through ed permit and lease mechanisms.

corps and FWS recognize the need for planned and fully-coordinated actions on lands covered under the General Plan t. This plan will lay the groundwork for joint action.

ment programs established by the St. Paul t for lands and waters under its ction will be consistent with the g established environmental objectives Corps of Engineers:

preserve unique and important ecological, thetic, and cultural aspects of our ional heritage.

conserve and use wisely the natural ources of our Nation for the benefit of sent and future generations.

enhance, maintain, and restore the ural and man-made environment in terms of productivity, variety, spaciousness, uty, and other measures of quality.

create new opportunities for the American ple to use and enjoy their environment.

the Corps and the FWS recognize ar agement issue that will not be resolved ter plan: the need for a clearer the Upper Mississippi National Wildlife uge. The FWS wishes to increase its uthority over all Federal lands in the

refuge. This question of authority involves national policy and is of regional concern to the North Central Division and Rock Island District as well as to the St. Paul District of the Corps. Both agencies will address this issue after they complete their resource master plans. In the interim, the coordinated land use allocations shown in this report will guide both agencies in their river resource management decisions. (See the recommendations section for further information.)

AREAS OF PUBLIC CONTROVERSY

Private Use of Federal Lands

5.04 In consonance with stated national policies, the St. Paul District of the Corps and the North Central Region of the U.S. Fish and Wildlife Service have determined that the continued, unlimited granting of private rights to public lands (for cottages, boathouses, private docks, and similar structures or uses) is no longer in the public interest. The strategy of these two agencies for implementing this position varies to some degree because of the differing Federal purpose of each agency: fish and wildlife (FWS), and navigation (Corps).

5.05 The Chief of Engineers has recognized that leasing of Federal lands in the floodplain for private recreational cottages contradicts general zoning principles since private development of this nature creates a hazard to human life and does not provide maximum overall use of Government land for public purposes. In response to this policy of the Chief of Engineers, no new cottage site leases will be granted and existing cottage site leases will be phased out by December 31, 1989. Implementation of this policy will affect 32 cottage sites currently on Corps lands in the study area.

5.06 Both the Corps and the FWS have a consistent grandfathering policy. This policy honors existing licenses, "grandfathering" them so that the license holders may keep them as long as the holders or their spouses live and as long as the licenses meet Federal restrictions. This policy will gradually eliminate existing private-use licenses without imposing hardship on current license holders. The public comments on this issue have helped clarify the

5. LAND USE ALLOCATION

language of the public-use policy. The Corps and FWS have identified one exception to the principle that private special use of Federal lands is not in the best public interest. Specifically, exceptions to this principle can be granted on a limited, case-by-case basis when the primary purpose of the Federal project is enhanced. The licensing of private activities on Federal lands may have merit and may be

allowed if the applicant can clearly activities have a public benefit tha public cost. An example is the riprap eroding shorelines.

5.07 Table 5-1 shows how the Corps and for purposes of this plan, to adminis use policy.

TABLE 5-1 - CORPS-FWS ADMINISTRATION OF PRIVATE-USE POLICY IN THE ST. PAUL DISTRICT

	Now-1985	1985-1989
NEW STRUCTURES (Private)		
Inside Limited Development Areas	No (1).....	No.....
Outside Limited Development Areas	No	No.....
NEW COMMUNITY DOCKS		
Inside Limited Development Areas	No	Yes.....
Outside Limited Development Areas	No	No
EXISTING COTTAGES UNDER LEASE	Yes (5).....	Yes (5)
EXISTING STRUCTURES UNDER LICENSE		
Relicense to Existing Owner		
Inside or Outside Limited Development Areas	Yes	Yes
Relicense to <u>New</u> Owner		
Inside or Outside Limited Development Areas	Yes	Yes
Maintenance of Private-Use Existing Structure		
Inside or Outside Limited Development Areas	Yes	Yes
Replace or Reconstruct Existing Structure		
Inside or Outside Limited Development Areas	Yes	Yes
Expand or Relocate Private Structures		
Inside or Outside Limited Development Areas	No	No
EXISTING COMMUNITY DOCKS		
Inside Limited Development Areas	Yes	Yes
Outside Limited Development Areas	Yes	Yes

(1) No new permits according to Memorandum of Understanding.

(2) Begin grandfathering in January 1990, in accordance with Public Law 97-140.

(3) Community docks outside limited development areas may remain as long as they pass annual safety inspections.

(4) Limited to 25 percent of fair market value.

(5) No approval will be granted for reconstruction of severely damaged structures.



ant can clearly show that these
lic benefit that outweighs the
le is the riprapping of certain

ow the Corps and the FWS intend,
plan, to administer the private

PAUL DISTRICT

1985-1989 Jan 1, 1990

..... No
..... No

..... Yes
..... No

es (5) No

es Yes(2)

es No

es Yes(4)

es No

..... No

es Yes
es Yes(3)

5.08 In the next phase of master planning, the St. Paul District will prepare an operational management plan (OMP) to further address the private recreation use issues. Specifically, limited development areas will be identified.

5.09 Table 5-1 indicates whether private recreation structures are permissible under stated conditions. Even though structures may be permitted under these management rules, they are subject to various Federal, State, and local permit requirements, and to lease or license conditions. The only new structures within the St. Paul District that may be allowed in limited development areas are community docks. Further information on community docks will also be in part III of this master plan. Table 5-1 also shows that holders of existing licenses for private structures will not be able to transfer their special-use licenses after December 31, 1989. Licensed private recreational structures or uses on Corps-administered land allowed after 1990 may be "grandfathered," to the license holder of record, subject to the following conditions:

- A use or structure can remain until replacement is required; or
- A use or structure can remain until the death of the permittee; or
- A use or structure can remain until the sale or other type of transfer of legal ownership or cessation of use of the facility.
- Cottage site leases will not be extended beyond December 31, 1989, in keeping with Federal floodplain management policies.

5.10 The District will treat any unauthorized use or structure as a trespass or an encroachment on public property. Such structures will be removed. Limited development areas generally will not be located on land that the land use allocation plan designates as intensive-use recreation areas, wildlife management areas, or natural areas. Low-density recreation lands will be primarily considered in designating limited development areas.

5. LAND USE ALLOCATION

5.11 Three existing public recreation leases allow local governments to issue permits for private recreation structures on Corps lands:

- Buffalo City - pool 5 (expires 1987).
- Brice Prairie Township (Lake Onalaska) - pool 7 (expires 1990).
- Guttenberg - pool 10 (expires 1997).

When these leases expire, these private structure areas will return to Corps control and the Corps private-use policy will apply.

Management of Private Use

5.12 General - The following paragraphs describe the Corps of Engineers authority and regulations for management of private use.

5.13 Authority:

- Title 16, United States Code, Section 460d - The Flood Control Act of 1944, now Title 16, United States Code, Section 460d, authorized the Chief of Engineers to construct, maintain, and operate public park and recreation facilities at Corps of Engineers water resource development projects. This law also authorizes the Chief of Engineers to lease project lands upon such terms for such purposes as he deems reasonable in the public interest. At a leased project, the water areas must be open to public use, and ready access to and exit from the water area along the shore must be maintained.

- Regulation - The Chief of Engineers exercised the authority granted him; and, in 1974, he published a regulation (ER 1130-2-406) that outlined his policy for management of the shoreline or lakeshore at Corps of Engineers civil works projects. That regulation is in Title 36, Code of Federal Regulations, section 327.30. The Chief of Engineers management policy states the following:

"It is the objective of the private exclusive use of public lands to the degree necessary to gain maximum benefit to the general public. (ER 1130-2-406, paragraph 4b and Title 36, Code of Federal Regulations, section 327.30(d)(1)).

It is the policy of the Chief of Engineers that private exclusive use will not be granted on new lakes or on lakes where no other uses exist as of the date of regulation. Such use will be granted only to honor any past commitments which exist (ER 1130-2-406, paragraph 4b and Title 36, Code of Federal Regulations, section 327.30(d)(2))."

5.14 The Chief of Engineers management policy implemented by the Corps of Engineers Division, as provided in North Atlantic Division Supplement 1 to ER 1130-2-406. Appendix 1, of the supplement states the following:

"It is the policy of the U.S. Army Corps of Engineers that lands and waters administered shall be managed to provide maximum benefits to the overall general public. A corollary of this policy is that private exclusive use may be permitted on lands administered properties which are compatible with authorized project purposes include, but not limited to, navigation, flood damage reduction, recreation and fish and wildlife management."

5.15 Past Commitments - Grandfathering

- Regulation - Engineering Regulation 1130-2-406, paragraph 4b and Title 36, Code of Federal Regulations, Section 327.30(d)(2) states the policy of the Chief of Engineers regarding past commitments regarding private use on public lands.

- Grandfathering - As provided in the regulation discussed above, the grandfathering policy is intended to consider the prior commitments implicit in the issuance of permits. The residual value of a permitted use is considered. The grandfathering policy will be applied to all permits issued prior to the effective date of the regulation.



objective of the Corps to manage exclusive use of public property to the necessary to gain maximum benefits to the public. (ER 1130-2-406, paragraph 4a, Title 36, Code of Federal Regulations, section 327.30(d)(1)).

policy of the Chief of Engineers that exclusive use will not be permitted on or on lakes where no private facilities exist as of the date of this. Such use will be permitted only to past commitments which have been made. (ER 1130-2-406, paragraph 4b, and, Title 36, Code of Federal Regulations, section 327.30(d))

Engineers management policy has been the Corps of Engineers, North Central Division provided in North Central Division (ER 1130-2-406. Appendix E, paragraph 1) states the following:

policy of the U.S. Army Corps of Engineers that lands and waters which it shall be managed so as to maximize to the overall general public. A of this policy is that private recreation may be permitted only on those Corps owned properties where such use is with authorized project purposes. purposes include, but are not limited to, flood damage prevention, public recreation and fish and wildlife management."

Permits - Grandfathering:

1. - Engineering Regulation (ER) 1130-2-406, paragraph 4b and Title 36, Code of Federal Regulations, Section 327.30(d)(2), states that the policy of the Chief of Engineers is to honor commitments regarding private facilities or public lands.

Grandfathering - As provided in the regulations above, the grandfathering policy is to consider the prior Corps commitment at the issuance of permits and the use of a permitted structure or use. The grandfathering policy will help protect

permittees from inappropriate expenditures on their structures or uses. The process and policy provides for adequate warning so that no permittee should be surprised as to the implementation date.

5.16 Implementation Strategy

- Regulation - North Central Division (NCD) policy (NCD Supplement 1 to ER 1130-2-206, paragraph 3.e, October 12, 1982) states that "at projects where lawful permitted private recreational use exists, the District Engineer, or his authorized representative, will evaluate the compatibility of the permitted private recreational use with project purposes. Where such use is compatible with project purposes, the District Engineer may designate areas of Corps administered land for limited development."

LAND USE ALLOCATION DEFINITIONS

5.17 The land use allocation categories described below are based on criteria in Engineering Regulation (ER) 1120-2-400 and are modified to meet unique riverine conditions. Emergency operation requirements for navigation take priority over any of these five categories:

- Project Operations - These lands are required for siting or storing facilities, structures, or equipment necessary for authorized project purposes. This category includes lock and dam facilities, areas restricted for safety, major dredged material disposal sites, and Corps maintenance facilities. Recreational uses of such lands may be considered appropriate on a case-by-case basis.

- Recreation/Intensive-Use - These lands are allocated for use as developed public areas for intensive recreational activities, including areas for concessions and quasi-public development. An intensive recreation area is generally defined as a relatively small, distinctly defined area where concentrated public use for the more traditional recreation predominates, such as campgrounds, picnic areas, and

5. LAND USE ALLOCATION

swimming areas. These areas generally require extensive facility development and maintenance.

● Recreation/Low-Density - These lands are allocated for nonintensive, low-density recreation use. Low-density or dispersed recreation occurs generally throughout a large area and is not confined to a specific place. This type of recreation includes scattered, individual outdoor recreation activities. Low-density recreation areas normally are not identified with developed facilities or with areas of intense group concentration. Typical activities on such lands include hiking, backpacking, hunting, fishing, primitive camping, horseback riding, and cross-country skiing. This allocation includes all recreation sites on Corps lands identified by GREAT I as recreation enhancement sites.

● Natural Areas - These lands are allocated to preserve scientific, ecological, historical, archeological, or aesthetic values and to protect threatened and endangered species. Public uses that do not adversely affect the protected resource may be allowed on a case-by-case basis.

● Wildlife Management - These lands are allocated for fish and wildlife and provide opportunities for wildlife/wildlands-related recreation. Hunting, fishing, trapping, bird watching, and photography are examples of such recreation. The lands will also be available for other traditional dispersed forms of public recreation such as primitive camping, boating, water skiing, sailing, canoeing, swimming, cross-country skiing, and hiking. The primary management emphasis is protection and enhancement of wildlife habitat values, recognizing traditional forms of public recreation at use levels that have proven compatible with wildlife. Designated portions of such lands are reserved as waterfowl sanctuaries ("closed areas") during migration periods. Such closed areas limit hunting and trapping. Limited development such as boat landings, access roads, trails, and parking areas are facilities that may be compatible with this allocation.

5.18 Recreation/low-density land wildlife management lands primarily density of recreation use considered example, on low-density recreation land habitat values of a site may be maintain recreation use levels. On management lands, habitat values would take recreation use levels.

5.19 This priority means that, if recreation under enough pressure from increased recreation are unable to provide for wildlife management and the U.S. Fish and Wildlife Service, the public to make resource management necessary to protect the integrity of. If future restrictions on use are not users would have adequate opportunities their ideas before any change in implemented.

5.20 After site-specific planning and coordination between the Corps, FWS, dredged material could be placed on for recreation/intensive-use, recreation or wildlife management if it would meet objectives in addition to project open it is consistent with applicable State

5.21 The St. Paul District historical tracts of submerged land for such activities fleeing areas. In the future, the examine the appropriateness of project light of allocations made on adjacent

LAND USE ALLOCATION

Introduction

5.22 Although the land use allocation planning document were prepared under Engineers planning guidelines, allocation Wildlife Service fee title lands are Corps map plates. It was necessary to tions on the land of both agencies because Corps fee title land is managed by Wildlife Service along with FWS fee, cohesive management unit: the Upper National Wildlife and Fish Refuge.



-density lands differ from
ds primarily in terms of the
e considered acceptable. For
recreation lands, the wildlife
ite may be compromised to
e levels. On wildlife manage
ues would take priority over

ns that, if refuge lands come
rom increased public use and
or wildlife needs, the Corps
dlife Service would work with
ource management adjustments
e integrity of wildlife lands.
on use are necessary, river
e opportunities to contribute
ay change in management is

fic planning and appropriate
e Corps, FWS, and the States,
be placed on lands allocated
-use, recreation/low-density,
if it would serve management
o project operations, and if
licable State laws.

ict historically has leased
for such activities as barge-
e future, the District will
eness of proposed leases in
de on adjacent dry land.

use allocations shown in this
prepared under Corps of
lines, allocations on Fish and
tle lands are shown on the
as necessary to show alloca-
agencies because most of the
is managed by the Fish and
with FWS fee title land as a
it: the Upper Mississippi
Fish Refuge. Since Corps-

administered fee title lands are so closely related to
the Fish and Wildlife Service fee title lands, it
would have been impractical and much less useful to
allocate only the Corps portion of these lands.

5.23 The confusion and misconceptions resulting from
the draft map plates (which showed Fish and Wildlife
Service land uses through symbols) supports this view.
The complete allocations delineated in the final map
plates of this report show Corps and Fish and Wildlife
Service ownership, consistent allocations between
lands, and refuge boundaries.

5.24 These allocations illustrate how the lands of
these two agencies combine to form the Upper
Mississippi National Wildlife and Fish Refuge. For
example, the plates clearly illustrate that not all
project operation areas or recreation allocations are
on Corps land and that not all wildlife management or
natural areas are on Fish and Wildlife Service land.

5.25 In the development of land use allocations,
certain systemwide guidelines were established that
predetermined allocations for a very few areas,
although most Federal land areas were considered
individually during the allocation process. These
general allocation guidelines included the following:

- All Corps-managed recreation areas were allo-
cated at least in part as recreation/intensive-
use because they were originally constructed as
developed recreation areas.

- All GREAT I-recommended primitive camp/beach
areas on Federal land were allocated as
recreation/low-density.

- Existing sand beaches with significant historic
recreational use or beaches in areas with
projected demand were allocated as
recreation/low-density.

- Existing dredged material containment areas and
Corps facilities at the locks and dams (including
levee areas) were allocated as project opera-
tions.

5. LAND USE ALLOCATION

- Archaeological sites listed on the National Register of Historic Places and significant areas of native prairie would be allocated as natural areas.
- Access points with limited, existing developments that primarily provide for hunting and fishing-related boat launches would be allocated as wildlife management.
- Access points with good access to the main channel that primarily serve recreational boat launching would be allocated as recreation/low-density.

5.26 Some allocation principles were developed and applied case by case. For example, on some island areas, beach sites were allocated as recreation/low-density although the rest of the island was allocated as wildlife management. This allocation method addressed both the recreational use of the beach site and the natural resource value of the island in question. The wildlife management allocation does not limit recreation use of the island to the recreation/low-density area, although only the recreation/low-density beach area would be managed and possibly maintained for recreation.

5.27 In some cases, allocations reflected both interim and ultimate uses. For example, where leases that are scheduled to expire soon would change the ultimate highest and best use of a tract of land, an allocation that reflects this ultimate use was chosen. The allocations do not reflect only existing or interim uses, and the plans should not be perceived as traditional land use maps that only reflect existing uses. The plan is a management tool and is not intended to represent only existing conditions.

5.28 The following paragraphs summarize land use allocations of Corps and Fish and Wildlife Service lands from the St. Anthony Falls pools in Minneapolis, Minnesota, to lock and dam 10 in Guttenberg, Iowa. Specific allocations of various Federal land areas are discussed.

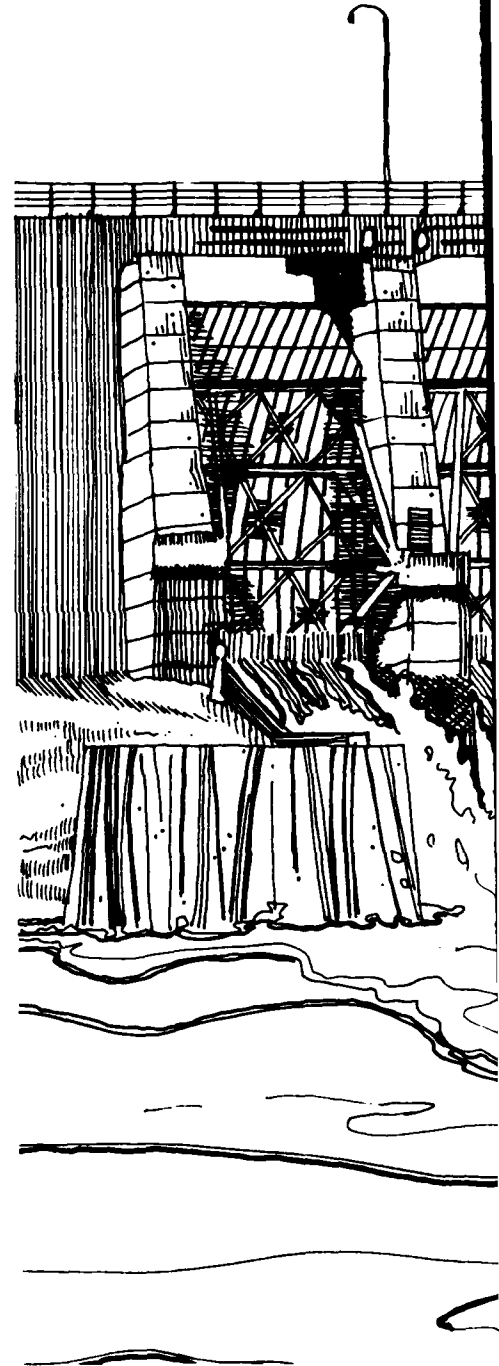
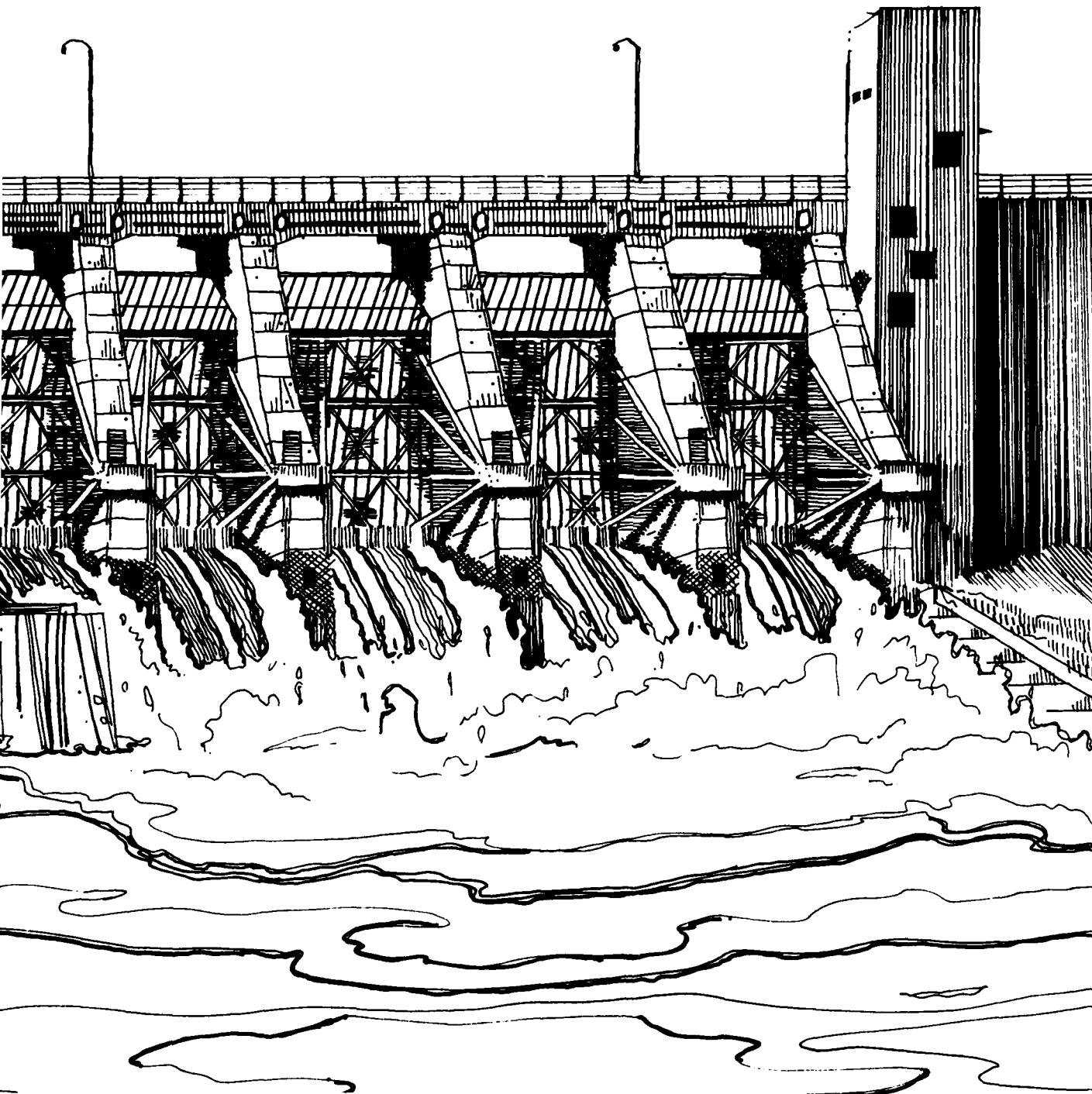


FIGURE 5-2. The pool system created by construction conflict with one another and result in multi-agencies and involved individuals a critical system.



...en created by construction of the many dams on the river serve other valid purposes. In many instances, these other purposes seem to
...er and result in multiple demands on similar resources. These multiple demands make the working relationships between managing
...individuals a critical concern. How they work together in the future will significantly influence the overall character of the river

5. LAND USE ALLOCATION

LAND USE ALLOCATION BY POOL

Upper and Lower St. Anthony Falls and Pool 1 (Plates 1 - 3)

5.29 Audited accounts of Federal lands in these pools show that the Corps of Engineers has acquired and presently administers approximately 45 acres of federally-owned land and water areas: 12 acres in the St. Anthony Falls area and 33 acres in pool 1. Only about 16 acres of land near pool 1, 4 acres of land adjacent to Lower St. Anthony Falls pool, and 2 acres at Upper St. Anthony Falls pool are above the water surface. These lands are used primarily for lock and dam facilities such as the control structures, parking areas, and access roads. About 1.6 acres of the project lands in Lower St. Anthony Falls pool are leased to the Shiely Sand and Gravel Company for a storage yard and concrete plant. Most of these areas have been allocated as project operations. The shoreline area upstream of the Ford Plant Bridge and the islands immediately below lock and dam 1 have been allocated as recreation/low-density.

5.30 Proposed use of Corps land at St. Anthony Falls for the city of Minneapolis West River Parkway project is compatible with the project operations allocation as long as the parking, access, and operational concerns of the Corps are adequately resolved.

Pool 2 (Plates 3 - 9)

5.31 Audited accounts of Federal lands show that the Corps of Engineers has acquired and presently administers approximately 1,220 acres of Federally-owned land and water in the lock and dam 2 area. Because of the manner of acquisition (which generally provided for overlap of property into the adjacent pool at the structure sites), only a small portion of the total area actually lies within pool 2 above lock and dam 2, with the rest below the lock and dam complex. Only about 55 acres of this land are above the water surface in pool 2, mostly in the chain of small islands immediately upstream from the lock and dam on the right side of the main channel. These islands have been allocated as recreation/low-density but they have limited recreation potential until the water quality in pool 2 improves.

Pool 3 (Plates 9 - 14)

5.32 The Corps of Engineers holds title in pool 3. Of this total, managed as part of the Gores Wildlife under a license agreement with the Department of Natural Resources.

5.33 Although this pool is within the Twin Cities, limited road access and intermittently poor water quality have limited recreation facility development and significantly limited user interest in the Mississippi. In contrast, pressure on the St. Croix, which has better access and water quality plus better access and facilities documented. User trends over the years indicate that pool 3 is receiving increasing use, however, with users coming primarily from the Twin Cities. Most of the open-water recreation in pool 3 occurs near the mouth of the River, near Hastings and Diamond Bluffs (the third highest open-water boat use survey, 1976).

5.34 Eleven dredged material islands were identified during the GREAT I survey on September 5, 1976. Two of these are in pool 3 (miles 807.5R and 799.4R). The recommended primitive recreation sites at miles 807.5R, 805.5R, 802.3R, and 799.4R have been allocated as recreation. This allocation is consistent with the recommendations.

5.35 Two recreation sites are on Federal land in pool 3: Lake Rebecca Park (leased to the State of Minnesota) and Sturgeon Lake Access. The allocations at Lake Rebecca Park are between recreation/intensive-use, low-density, and wildlife management. The delineate distinct use areas in the development plan for the park (Corps 1978). The Corps Sturgeon Lake Access is for recreation/intensive-use, as well as operated access areas. This and other operated sites in other pools are managed for intensive recreation.

5.36 Portions of Prescott Island are owned by the Minnesota Department of Natural Resources and have been allocated for wildlife management and have been



ers holds 5,610 acres in fee
his total, 4,122 acres are
res Wildlife Management Area
ment with the Minnesota
sources.

s within an hour's drive from
ed road access to the pool,
ter quality, and limited
velopment have in the past
r interest in this portion of
contrast, the intense use
ix, which has higher water
ess and facilities, is well
is over the last few years
ceiving increasing pressure,
ing primarily from the Twin
n-water recreational boating
the mouth of the St. Croix
d Diamond Bluff. Pool 3 has
water boat use (GREAT I Aerial

erial islands/beaches/camps
the GREAT I Aerial Survey on
of these areas receive "heavy"
d 799.4R). Four GREAT I-
recreation sites are in pool 3
802.3R, and 799.4R. All four
ed as recreation/low-density.
nsistent with the GREAT I

s are on Federal lands in pool
ased to the city of Hastings,
n Lake Access (Corps-operated).
becca Park divide the area
ensive-use, recreation/low-
management. The allocations
se areas outlined in the
ne park (Corps of Engineers,
eon Lake Access was allocated
ve-use, as were most Corps-
This and similar Corps-
pools are managed primarily

tt Island are under lease to
nt of Natural Resources for
nd have been allocated as

wildlife management lands. The remaining island area
was allocated as recreation/low-density.

5.37 The only project operations allocation in the
pool is the Corps lock and dam site. Most of the
remaining Federal land in pool 3 is managed as part of
the Gores Wildlife Management Area under a license
agreement with the Minnesota Department of Natural
Resources. Within this area is the DNR's North Lake
Access. The Gores Wildlife Management Area is
allocated as wildlife management, with the exception
of the recreation/low-density areas associated with
the GREAT I-recommended recreation sites discussed
earlier.

Pool 4 (Plates 14 - 27)

5.38 The Corps of Engineers has acquired in fee title
about 2,900 acres of land and water. The U.S. Fish
and Wildlife Service administers 6,035 acres that it
holds in fee title. Of the 2,900 acres of Corps-owned
land and water, about 2,898 acres have been made
available to the Fish and Wildlife Service as part of
the Upper Mississippi National Wildlife and Fish
Refuge for management in conjunction with FWS-owned
lands. About 2 acres of Corps land at lock and dam 4
have been retained for Corps use and are outside the
Upper Mississippi National Wildlife and Fish Refuge.

5.39 In pool 4, Federal lands extend from lock and dam
4 upstream to the Chippewa River. No federally-owned
lands are located on Lake Pepin, which lies between
the Chippewa River and lock and dam 3. Just below
lock and dam 3, about 138 acres on the Minnesota side
of the old channel were acquired by the Corps in
connection with work on the lower approach channel to
lock 3. Although these 138 acres are actually in pool
4, Federal audit records relate the land to pool 3 and
the lock and dam 3 project. Therefore, these 138
acres are not included in the 2,900 acres of Corps
lands acquired as pool 4 lands.

5.40 About 6,600 acres of federally-owned lands in
pool 4 are above the normal flat pool elevation of
667.0. The Fish and Wildlife Service has jurisdiction
over 4,840 acres, all in the refuge area downstream
from the Chippewa River. The Corps of Engineers has
jurisdiction over 1,760 acres, with about 1,605 acres
downstream from the Chippewa River and about 155 acres
immediately downstream of lock and dam 3. These 155
acres represent an increase over the originally

5. LAND USE ALLOCATION

acquired 138 acres. The additional 17 acres resulted from accretion and from the deposition of dredged material.

5.41 Most of the open water recreational boating in pool 4 occurs on Lake Pepin. However, the dredged material beach areas below the Chippewa River are the third-most heavily-used areas within the study area (GREAT I Aerial Survey, 1976). Only pools 9 and 10 have more island/beach camp recreation.

5.42 Although 12 sites on Federal land along the main channel have been allocated as recreation/low-density, few Federal land areas are accessible by wheeled vehicles or have characteristics suitable for development of recreation facilities. Six GREAT I-recommended primitive camp areas are in pool 4. Three of these channel-side sites are on Federal land (miles 759.5L, 756.2R, and 753.3R). All three of these sites have been allocated as recreation/low-density areas.

5.43 Indian Slough Landing, on the Wisconsin Highway 25 causeway adjacent to the main channel, was allocated as recreation/low-density. This site on Corps land is operated and maintained by the FWS and Buffalo County, Wisconsin. The ramp provides access to the main channel and is used for recreation-related launches and hunting/fishing-related launches. Pontoon Slough and Beef Slough Landings are also on the Highway 24 causeway but serve primarily the backwater area with hunting and fishing launches. The latter two landings have been allocated for wildlife management and are managed and operated by the FWS and Buffalo County. Peterson Lake Landing (FWS) near RM 754 on the Minnesota side was also allocated as wildlife management because it serves primarily hunting/fishing-oriented launches and has limited facilities.

5.44 Federal lands that comprise the Nelson Trevino Research Natural Area (extending from the Chippewa River to the State Highway 25 causeway) were allocated as a natural area with the exception of the Reads Landing project operations area and an adjacent recreation/low-density beach area. The Nelson Trevino Research Natural Area is part of the Upper Mississippi National Wildlife and Fish Refuge.

5.45 Two Corps land areas in pool 4 are leased for public recreational purposes: Riecks Lake Park and a

highway wayside park. Riecks Lake site, adjacent to Buffalo Slough, of Alma, Wisconsin. Developed parcels were allocated as recreation/intensive-use. undeveloped shoreline below 1 allocated as wildlife management. Highway Commission has a license for a 1-acre site as a wayside park in the Lake Park. This wayside park is recreation/intensive-use.

5.46 Remaining Federal lands in pool 4 are allocated as wildlife management and are managed by the Upper Mississippi National Wildlife and Fish Refuge.

Pool 5 (Plates 27 - 31)

5.47 The Corps of Engineers has administered about 7,550 acres of pool 5 and it holds special rights on about 1,000 acres administered by the Fish and Wildlife Service. Of the 7,550 acres of Corps-administered water area, the Fish and Wildlife Service manages most as part of the Upper Mississippi National Wildlife and Fish Refuge in conjunction with the Corps lands. About 2 acres of Corps land have been retained for exclusive use of the pool 5 Federal lands owned in fee. The remaining 660.0 acres are above the normal flat.

5.48 Data from the GREAT I Aerial Survey (1976) indicated an open-water boat density of approximately one boat per 130 water acres with an additional 35 boats per water acre. This is a very low density for recreational boating. Most of the recreational boating occurs in the upper third of the pool. The Wea island/beach areas at river mouth are heavily used for hunting. The Wea island/beach areas at river mouth experience moderate recreational use.

5.49 Three sites (miles 749.7L, 749.7R, and 749.7R) were recommended by GREAT I as prime recreation areas. In addition, the GREAT I reported beached boats at eight sites. Boats were observed on only three sites. Three sites have been allocated as recreation/low-density consistent with the GREAT I recommendations. The Corps will maintain these sites as recreation/low-density.



park. Riecks Lake Park is a 12-acre Buffalo Slough, leased to the city of Wisconsin. Developed portions of the site are as recreation/intensive-use while the shoreline below the boat ramp was for wildlife management. The Wisconsin State Department has a license to operate a 1.40-mile-long wayside park in the vicinity of Riecks Lake. This wayside park is also allocated as intensive-use.

Federal lands in pool 4 were allocated for wildlife management and are managed as part of the Upper Mississippi National Wildlife and Fish Refuge.

31)

The Corps of Engineers has acquired and presently owns about 7,550 acres of land and water area, plus special rights on an additional 1,350 acres, managed by the Fish and Wildlife Service. The Fish and Wildlife Service manages the land and water of the Upper Mississippi National Wildlife and Fish Refuge in conjunction with FWS-owned lands. About 5,150 acres of Corps lands at lock and dam 5 are reserved for exclusive Corps use. Of the lands owned in fee title, about 5,150 acres are at the normal flat pool elevation of 745 feet.

The GREAT I Aerial Survey (September 5, 1974) showed an open-water boat-use density of 1 boat per 130 water acres in pool 5 and 35 boats pulled onto sandbars. This is a low density for recreational boating. Recreational boating activity is in the upper pool. The Weaver Bottoms Area is used for hunting. Dredged material is placed at river miles 749 and 745 for recreational use.

(miles 749.7L, 743.6R, and 741.6R) were identified by GREAT I as primitive camp/beach sites. In the GREAT I Aerial Survey, 10 boats were counted at eight sites. Five or more boats were counted on only three sites. These GREAT I sites are allocated as recreation/low-density, consistent with the GREAT I recommendations to allocate these as recreation beaches.

5.50 Seven other existing beach areas have been allocated as recreation/low-density. Although recreation use of some of these areas is presently low, their highest and best use is for recreational purposes. Past dredging practices have created an abundance of sandy beach areas in mid-pool, adjacent to Weaver Bottoms.

5.51 Lower Spring Lake Landing has been allocated as recreation/low-density because it has more developed site facilities than access points allocated as wildlife management. The Buffalo City Landing and Belvidere Landing are in shoreline areas allocated as recreation/low-density.

5.52 Half Moon Landing, Pritchard Landing, Weaver Landing, and Upper Spring Lake Landing are in areas allocated as wildlife management and serve hunting and fishing launches. Consequently, these areas are allocated as wildlife management.

5.53 The existing dredged material disposal sites, West Newton Site 5.18 (mile 745.9R) and the Lost Island Site (mile 745L), have both been allocated as project operations, as have the lock and dam and the lower pool levee.

5.54 Most of the shoreline area leased to Buffalo City, Wisconsin, for public park and recreation purposes is allocated as recreation/low-density. When the lease expires in 1987, private-use structures along this shoreline will return to Corps control and will be subject to the special-use license grandfathering policy outlined in this plan.

5.55 The West Newton Chute shoreline (mile 749R) is allocated as recreation/low-density. Its location (adjacent to the side channel with access to the main channel) provides potential for future recreational development. Special-use licenses along this shoreline are subject to the grandfathering policy outlined elsewhere in this plan.

5.56 Three Corps-owned sites on the Minnesota side adjacent to John Latch State Park are allocated as recreation/low-density. Future consideration will be given to transfer of management responsibility of these tracts to the State.

5. LAND USE ALLOCATION

5.57 Remaining Federal lands in pool 5 are allocated for wildlife management. These areas are managed as part of the Upper Mississippi National Wildlife and Fish Refuge.

Pool 5A (Plates 31 - 33)

5.58 The Corps of Engineers has acquired about 3,900 acres of Federally-owned land and water area, and it holds special rights on an additional 1,200 acres administered by the Fish and Wildlife Service. Of the 3,900 acres of Corps-administered land and water, the Fish and Wildlife Service manages about 3,870 acres as part of the Upper Mississippi National Wildlife and Fish Refuge in conjunction with FWS-owned lands. About 30 acres of Corps lands at lock and dam 5A and at the Corps of Engineers Fountain City Service Base have been retained for exclusive Corps use. Of the Federal lands owned in fee in pool 5A, about 3,000 acres are above the normal flat pool elevation of 651.0 msl. Of this total, 2,700 acres are under jurisdiction of the Corps of Engineers, and 1,300 are under jurisdiction of the FWS.

5.59 No GREAT I-recommended sites for primitive camp/beaches are in pool 5A, although recreational boating activity occurs in the middle pool area at sand beaches created by historic dredged material disposal. The GREAT I Aerial Survey on September 5, 1976, revealed 10 beaching sites used by recreational boats in pool 5A. The heaviest concentration of boats occurred at mile 730.0L and between miles 735 and 734. These sites accounted for nearly 80 percent of the beached boats observed in pool 5A. The most popular site, a past dredged material disposal area between mile 735 and 734, is State of Wisconsin land. The site at mile 730L at GREAT I disposal site 5A.08 was allocated as project operations, with beach areas at the site allocated as recreation/low-density. Two additional sites on Federal land at mile 734R and L were allocated as recreation/low-density to support the mid-pool recreational use occurring there.

5.60 Other Federal lands allocated for recreation include the 11-acre Minnesota City Boat Club (intensive-use) area, a 1.3-acre Wisconsin Highway Department wayside park and an area used as part of the Winona Prairie Island Park, all leased from the Corps.

5.61 Areas of Federal land allocated for operations include the Corps Fountain City Service Base, the lock and dam 5 facility structure along the lower pool area and the disposal site 5A.08 at mile 730.5.

5.62 Two areas adjacent to the lower pool area at Winona, Minnesota are allocated for recreation because of the presence of native prairie. These areas are important to local educational and natural area allocation will not affect the allocation of the boat ramps at Upper and Lower

5.63 The remaining Federal lands allocated as wildlife management are the Fountain City Service Base, the Minnesota City Boat Club lease, the Fountain City Service Base, the Park tract, the Fountain City Service Base, the pool levee, and the lock and dam 5 facility. The only Federal land areas outside of the pool area are the

Pool 6 (Plates 33 - 38)

5.64 The Corps of Engineers has acquired about 1,470 acres of Federally-owned land and water area. About 1,470 acres are owned and administered by the U.S. Fish and Wildlife Service. The Fish and Wildlife Service manages most of the Corps property as part of the Upper Mississippi National Wildlife and Fish Refuge in conjunction with FWS-owned lands. The only Federal lands in the refuge are about 2 acres of Corps land at lock and dam 6, a portion of the Port Arthur barge-fleet lease site, the Corps of Engineers Winona's Prairie Island Park, and a dredging company for a harbor and

5.65 Of the Federal lands owned in pool 6, about 1,640 acres are above the normal pool elevation of 645.5. Of this total, about 1,640 acres are administered by the Corps of Engineers and about 1,640 acres are administered by the FWS. The FWS manages the 5,617-acre Trempealeau Wildlife Refuge, which is physically located in pool 6 by the Burlington Northern Railroad

5.66 The entire pool is used heavily for boating, although most of the boating is limited to the mid-pool area. Eighty



land allocated as project
Corps Fountain City Service
dam 5 facilities, the levee
pool area, and the historic
mile 730.5.

to the lower pool levee at
allocated as natural areas
of native prairie species that
educational institutions. The
will not adversely affect use
per and Lower McNally Landing.

ederal lands in pool 5A are
management and are in the Upper
Wildlife and Fish Refuge. The
ub lease, the Prairie Island
City Service Base, the lower
and dam 5 facilities are the
outside of the refuge.

ers has acquired about 330
land and water in the pool 6
are owned and administered by
Life Service. The Fish and
es most of the 330 acres of
of the Upper Mississippi
h Refuge in conjunction with
ly Federal lands outside of
res of Corps lands at lock
he Port Authority of Winona
the Corps tract in the city
Park, and an area leased to
harbor and storage site.

ds owned in fee in pool 6,
above the normal flat pool
this total, 300 acres are
ps of Engineers, and 1,340
y the FWS. In addition, the
acre Trempealeau National
s physically separated from
Northern Railroad tracks.

sed heavily for recreational
of the beaching sites are
area. Eight boat beaching

sites were identified in the GREAT I Aerial Survey
(September 5, 1976). The majority of sites and
beached boats were observed between miles 720 and 724.
Most of this historic recreational use occurs on non-
federal land.

5.67 Five Federal land areas in pool 6 are allocated
as recreation/low-density. A beach area immediately
below lock and dam 5A has been allocated as
recreation/low-density because of its potential as a
recreational lockage waiting area. "Mosquito Island,"
a heavily used sandy beach site at mile 722, is
allocated as recreation/low-density. An island beach
area above lock and dam 6 has been allocated as
recreation/low-density, as has the mainshore area
above the lock, at Trempealeau, which is the site of
proposed marina development. Most of an 11-acre site
above the lock and dam on the Minnesota side
(currently leased to a dredging company for equipment
storage and harbor use) has been allocated as
recreation/low-density because of the site's
accessibility. An area of the site not affected by the
dredging company operation has been allocated for
wildlife management. A small tract of Corps land
leased by the city of Winona as part of that city's
Prairie island Park is allocated as
recreation/intensive-use.

5.68 Project operation allocations include the lock
and dam facilities plus an area at Yeomans Pond (mile
727) leased to the Port Authority of Winona for barge
fleeting. The remaining Federal land in pool 6 is
allocated as wildlife management. The bulk of this
land is owned by the FWS, which administers it as part
of the Trempealeau National Wildlife Refuge. Other
wildlife management lands in the pool are part of the
Upper Mississippi River National Wildlife and Fish
Refuge.

Pool 7 (Plates 38 - 42)

5.69 Approximately 14,300 acres are held in fee by the
Federal Government in pool 7. Of this total, 7,000
acres are under the jurisdiction of the Corps, and
7,300 acres are under the jurisdiction of the FWS.
All Corps lands except the project operations site at
Trempealeau, Wisconsin, and the Nelson Park recreation
site are part of the Upper Mississippi National
Wildlife and Fish Refuge. Of the Federal lands owned
in fee, about 7,100 acres are above the normal flat
pool elevation of 639.0.

5. LAND USE ALLOCATION

5.70 Pool 7 ranks fourth in recreational use among the 13 in the study area (according to the 1976 GREAT I Aerial Survey use counts). Recreational users come primarily from the La Crosse, Wisconsin, area even though that city's river frontage is in pool 8.

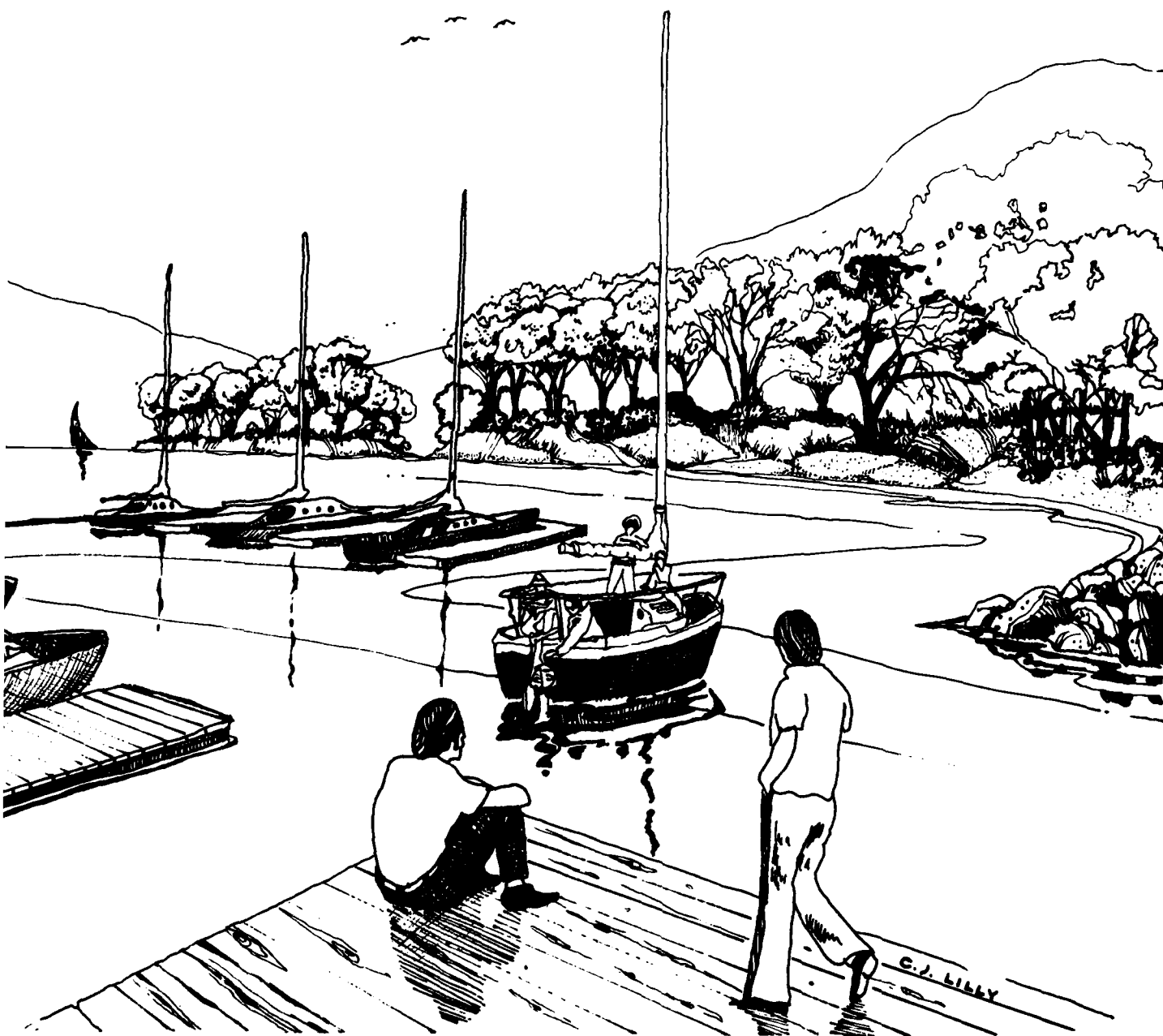
5.71 The GREAT I Aerial Survey reported eight beaching sites being used by four or more boats in pool 7. In pool 7, 70 boats were observed on beach sites adjacent to the main channel. The heaviest concentrations of boats were at miles 705.0L, 706.5L, and 709.0L. Because of their heavy use concentrations, seven sites, including miles 705.0L and 709.0L, were recommended by GREAT I for maintenance or development as primitive camp/beach sites. The other five GREAT I recreation sites are at miles 713.8R, 713.0L, 711.7R (lower Richmond Island), 706.5R (Dakota Island), and 703L (lower Dresbach Island). All seven of these sites are on Federal land, and all have been allocated as recreation/low-density. In addition, three other channel-side sites were allocated as recreation/low-density: the shoreline between miles 712L and 713L, the shoreline across the channel from Dakota Island, and a portion of upper Dresbach Island.

5.72 Allocating two shoreline areas at Dresbach Island as recreation/low-density while allocating most of the island as wildlife management addresses both the recreation demand in this area and the natural resource value assigned the island by Minnesota DNR and FWS personnel. A similar approach was used in allocating other recreation beach areas on islands with high resource value for wildlife (for example, Richmond Island in this same pool).

5.73 Nelson Park and the Wisconsin Sailing Club site at the upper end of French Island (both leased from the Corps for recreational purposes) are the only areas in pool 7 allocated as recreation/intensive-use. A number of access points and commercial sites leased from the Corps were allocated as recreation/low-density, including the launch area below lock and dam 6, Upper Brice Prairie Landing, Red Sails Resort, Lake Onalaska/Schafer's Landing, Fisherman's Road Landing, and the Upper and Lower Dike 7 Landing. Three upper pool backwater landings (Long Lake, Round Lake, and Lone Tree Landings) are allocated as wildlife management because they have limited facilities and serve primarily fish and wildlife-oriented boaters.



FIGURE 5-3. River navigation is not re... Future trends indicate that recreation... river. Many harbors provide excellent Wisconsin; and Lansing, Iowa.



gation is not restricted to commercial traffic. During the summer months, large numbers of recreational boats travel on the river. That recreational boating will continue to grow. To accommodate these craft, many small-boat harbors have been constructed along the river. These provide excellent "bases" for recreational craft, including the harbors at St. Paul, Hastings, Wabasha, and Winona, Minnesota; Bay City, Michigan; and Iowa.

5. LAND USE ALLOCATION

5.74 Project operation allocations include the lock and dam 7 dike, the Onalaska spillway, and the long-term dredged material disposal site 5A.32 adjacent to lock and dam 6 at Trempealeau. The remaining Federal land in pool 7 is primarily suited as refuge and is allocated as wildlife management. These and other areas are managed as part of the Fish and Wildlife Service Upper Mississippi National Wildlife and Fish Refuge.

5.75 The Lake Onalaska shoreline on the Wisconsin side (under lease to Brice Prairie Township for recreational purposes) is allocated as wildlife management. When the current lease expires in 1990, the permits for private structures along this shoreline will return to Corps control and will be subject to the private structure grandfathering policy described earlier. The unique wildlife values at Lake Onalaska are not duplicated elsewhere in the Upper Mississippi National Wildlife and Fish Refuge. Corps and FWS planners and resource managers determined that the highest and best allocation and future use for this shoreline is wildlife management. The wildlife management allocation allows management continuity for long-term wildlife protection and production.

Pool 8 (Plates 42 - 48)

5.76 Approximately 24,090 acres of combined land and water area are held in fee by the Federal Government in pool 8. Of this total, 9,500 acres are under the jurisdiction of the Corps, and 14,590 acres are under the jurisdiction of the FWS. About 10,390 acres of the Federal lands owned in fee in pool 8 are above the normal flat pool elevation of 631.0. Of this total, 3,950 acres are under the jurisdiction of the Corps and 6,340 acres are under the jurisdiction of the FWS.

5.77 Only the Corps lock and dam facilities and the recreation lease areas at Goose Island and Wildcat Park are not included in the boundaries of the Upper Mississippi National Wildlife and Fish Refuge. Heavy recreation use of main channel islands occurs in the mid-pool area adjacent to Lawrence Lake and Wildcat Park. Below Brownsville, Minnesota, and Wildcat Park is a broad expanse of relatively open water with numerous stump fields, shallow water, and few islands or shorelines suitable for beaching. These conditions limit recreational use of the lower pool area.

5.78 In pool 8, the GREAT I Aerial beaching sites with four or more survey also reported 578 private pool. The GREAT I main report re miles 702.3L and 686-689LR to primitive camp/beach sites. These as recreation/low-density. Six at the mid-pool main channel recreation/low-density, including 694.6R, 692.5L, 691.5L, 690.7R, 689.5L. The FWS I-90 Landing is allocated as recreation/low-density in proximity to the main channel recreational launchings. Three Co public park purposes (Goose Island and Stoddard Park) were recreation/intensive-use.

5.79 Large areas of sandy soil about make the Goose Island area the largest land in the study area suited for development. Goose Island Park (located by La Crosse County) is operated as a park with regional use. The development north of the La Crosse-Vernon County line is as recreation/intensive-use. The development of the county line (recently added) boat access improvements and trails are allocated as recreation/low-density, with the exception of three natural areas sites listed on the National Register of Historic Places at the county line ramp has a natural area. The county line ramp and intensive recreational use preservation of this archeological site is restricted. Two sites in the 717-acre lease are managed by the FWS as natural areas. These sites have been a part of the Upper Mississippi National Wildlife and Fish Refuge. The remainder of the 717-acre lease is outside the refuge boundary. Goose Island outside of the recreation boundary is allocated as recreation/low-density management. These areas are within the refuge boundaries.

5.80 Houston County's Wildcat Park is on Corps and FWS lands. The park, with its boat ramp, concession, and parking, is allocated as recreation/intensive-use.



GREAT I Aerial Survey recorded 12
four or more boats present. The
ed 578 private boats moored in the
main report recommended areas at
686-689LR to be maintained as
ch sites. These sites are allocated
density. Six additional areas along
in channel are allocated as
sity, including beach areas at miles
91.5L, 690.7R, 690.5R, and 689.0-
I-90 Landing in the upper pool is
eation/low-density because of its
e main channel and its use for
nings. Three Corps areas leased for
es (Goose Island Park, Wildcat Park,
Park) were allocated as
ve-use.

f sandy soil above normal pool level
and area the largest tract of Corps
dy area suited for recreational
e Island Park (leased from the Corps
y) is operated as a 717-acre county
al use. The developed lease area
osse-Vernon County line is allocated
nsive-use. The 72-acre area south
e (recently added to the lease for
vements and trail development) is
creation/low-density, with the
e natural areas. An archeological
the National Register of Historic
ty line ramp has been allocated as a
e county line ramp has been closed,
reational use that threatened
this archeological site has been
sites in the 72-acre lower island
by the FWS as native prairie grass
es have been allocated as natural
o prairie areas are in the Upper
al Wildlife and Fish Refuge while
the 717-acre recreation lease is
e boundary. Other areas at Goose
f the recreation lease area are
reation/low-density and wildlife
se areas are within the refuge

ty's Wildcat Park below Brownsville
WS lands. The developed park area
p, concession, and camping area was
ation/intensive-use. Undeveloped

park area was allocated as wildlife management. The
12.9-acre park leased to the village of Stoddard,
Wisconsin, has been allocated as recreation/intensive-
use and recreation/low-density. There are several
existing cottage leases along this shoreline area
which expire in 1988. These cottage sites have been
allocated as recreation/intensive-use because of the
area's recreational development potential. Part III
of the Corps master plan (plan of development) will
address the future use and possible development of
this area.

5.81 The Lawrence Lake Marina, owned by the FWS and
operated by private concerns, has been allocated as
recreation/low-density. Gary Candahl Park, owned by
the FWS and leased to Houston County, Minnesota, has
also been allocated as recreation/low-density. This
park is operated as a campground and access site under
a commercial sub-lease from Houston County.

Pool 9 (Plates 48 - 57)

5.82 The Corps of Engineers has acquired about 8,710
acres of federally-owned land and water areas in pool
9, and it holds special rights on an additional 25,050
acres that the FWS administers in pool 9. All of the
8,710 acres of Corps-administered land except the
Corps recreation areas at Blackhawk Park, Millstone
Landing, and Bad Axe Landing, and the lock and dam
site have been made available to the FWS for inclusion
in the Upper Mississippi National Wildlife and Fish
Refuge and for management in conjunction with FWS-
owned lands. About 8 acres of Corps lands at lock and
dam 9 have been retained for exclusive Corps use. Of
the Federal lands owned in fee in pool 9, about 18,790
acres are above the normal flat pool elevation of
620.0. Of this total, 6,620 acres are under
jurisdiction of the Corps of Engineers, and 12,170
acres are under jurisdiction of the FWS.

5.83 Pool 9 experiences moderate- to high-density
boating in the Lansing Bend area (miles 664-666) and
relatively low-density use elsewhere in the pool
(GREAT I Aerial Survey, 1976). The Lansing Bend area
experiences a great deal of congestion because of the
availability of sand beach and camping areas and
because of its proximity to the town of Lansing, Iowa,
and accompanying services. Houseboat rentals
available at McGregor, Iowa (which are restricted to
pools 9 and 10), account for some of the high
houseboat use in pool 9. Fishing, hunting, and

5. LAND USE ALLOCATION

canoeing will continue to be low density because there are more water surface acres accessible for these activities.

5.84 Development, redevelopment, or expansion of sand beach and camping areas elsewhere in the pool - away from the Lansing Bend - should provide additional recreation use and should reduce the congestion near Lansing. Four GREAT I-recommended primitive camp/beach sites are in pool 9: at miles 664.0R, 664.5L, 665-665.5R, and 678.9R. The recommended action for all these sites is to maintain them as beach areas by placing small quantities of dredged material at each site. These four sites are all on Federal land and have been allocated as recreation/low-density. An additional 10 beach sites adjacent to the main channel are allocated as recreation/low-density. The Corps-operated access sites at Bad Axe Landing and Millstone Landing were allocated as recreation/intensive-use.

5.85 The Corps-operated Blackhawk Park, the only major park in this pool, is allocated as recreation/intensive-use. Part III of this master plan (plan for development) will address reorganization of activity areas and improved circulation at the park.

5.86 Winneshiek Landing on Fish and Wildlife Service land is maintained by FWS and the Wisconsin Department of Transportation. It is allocated as recreation/low-density because of proposed site redevelopment by the maintaining agencies. Visger Landing, New Albin Landing, Big Slough Landing, and Cold Springs Landing (all on Federal land) are allocated as wildlife management because they serve primarily wildlife-oriented hunting and fishing boat launches.

5.87 Areas of Federal land allocated as project operations include a disposal site at Lansing Bend (mile 664.3R), a shoreline protection area south of Lansing (mile 662) and the lock and dam 9 structures and associated levee. A small tract of land below Lynxville, Wisconsin is leased by the Crawford County, Wisconsin, Highway Department for highway equipment storage. This small tract also has been allocated as project operations.

5.88 The Federal lands that make up the Fish and Wildlife Service Reno Bottoms Research Natural Area in the Upper Mississippi National Wildlife and Fish

Refuge have been allocated under the natural resource category. Remaining Federal holdings in pool 10 are allocated as wildlife management and are included in the Upper Mississippi National Wildlife and Fish Refuge, as are other Federal lands in the pool with the exception of those noted earlier.

Pool 10 (Plates 57 - 66)

5.89 The Corps of Engineers has acquired about 5,340 acres of land and water areas, and holds rights on an additional 5,340 acres administered by the FWS in pool 10. Of the 3,720 acres of administered land and water area, most are managed by the FWS in conjunction with FWS-owned lands as part of the Upper Mississippi National Wildlife and Fish Refuge.

5.90 Of the Federal lands owned in fee title in pool 10, about 11,100 acres are above the normal flood elevation of 611.0. Of this total, 2,260 acres are under the jurisdiction of the Corps, and 8,840 acres are under the jurisdiction of the FWS. A relatively small portion of the total above-water Federal land consists of high, firm ground suitable for development and use for land-based recreational activities. The relatively low pollution level of the pool encourages water-contact sports.

5.91 Pool 10 experiences moderate- to high-boating activity immediately south of lock and dam 10 in the Gordons Bay Islands-Jackson Island-Du Charme Creek area and near the upstream end of Wyalusing Slough (across from the Wyalusing Public Area). These areas all have sand beaches/islands available. The Gordons Bay Islands-Jackson Island-Du Charme Creek area is used heavily by houseboat runabouts. Many of the houseboats are rented from McGregor, which are restricted to pools 9 and 10. Because Gordons Bay and Du Charme Creek Island are low-lying and sometimes submerged, they are not used for recreation during the season. In addition, approximately 760 boats are privately moored in pool 10 (GREAT I Aerial Survey, 1976). There are concentrations of private boats and marinas between lock and dam 10 and Clayton, Iowa, and the U.S. Highway 18 bridge (Marquette-Prairie Du Sac bridge/causeway) and lock and dam 9.

5.92 The GREAT I Aerial Survey also recorded in pool 10 that 15 beaching sites are used by b



been allocated under the natural area remaining Federal holdings in pool 9 are wildlife management and are included in Mississippi National Wildlife and Fish and other Federal lands in the pool, with of those noted earlier.

57 - 66)

ps of Engineers has acquired about 3,720 and water areas, and holds special additional 5,340 acres administered by pool 10. Of the 3,720 acres of Corps-land and water area, most are managed by in conjunction with FWS-owned lands as part of Mississippi National Wildlife and Fish

Federal lands owned in fee title in pool 1,100 acres are above the normal flat pool of 611.0. Of this total, 2,260 acres are in jurisdiction of the Corps, and 8,840 acres are in jurisdiction of the FWS. A relatively small portion of the total above-water Federal land is high, firm ground suitable for development and land-based recreational activities. The low pollution level of the pool waters is suitable for water-contact sports.

experiences moderate- to high-density activity immediately south of lock and dam 9 on the Mississippi River (Gordons Bay Islands-Jackson Island-Du Charme Island and near the upstream end of Wyalusing Bay (Gordons Bay Islands-Jackson Island-Du Charme Island area is used heavily by houseboats and rental units. Many of the houseboats are rental units, which are restricted to pools 9 and 10. On the Mississippi River, Gordon's Bay and Du Charme Creek Islands are sometimes submerged, they are not useful for boating during the season. In addition, approximately 760 boats are privately moored in the Mississippi River (Aerial Survey, 1976). There are large numbers of private boats and marina slips between lock and dam 10 and Clayton, Iowa, and between Clayton, Iowa, and the Highway 18 bridge (Marquette-Prairie Du Chien area) and lock and dam 9.

AT I Aerial Survey also recorded in pool 11 beaching sites are used by boating

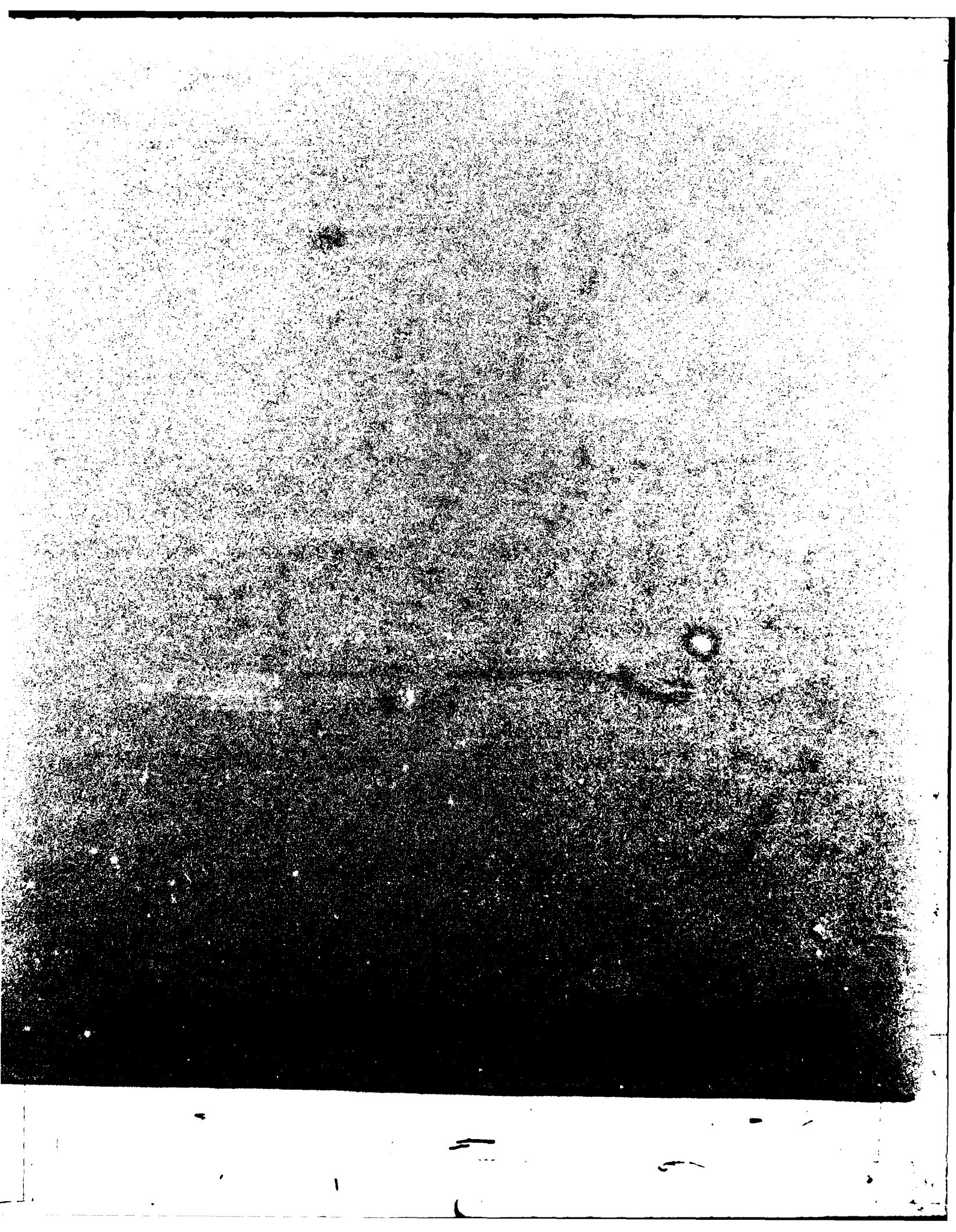
recreationalists. The GREAT I main report (1980) recommended redeveloping the site at mile 622.8L. This site is on Hovie Island, which is allocated as recreation/low-density. An additional 13 beach sites adjacent to the main channel are allocated as recreation/low-density.

5.93 The shoreline area at Willys Landing, which is presently used by individuals with special-use licenses, is allocated as recreation/low-density. This area will be evaluated in part III of the master plan as a future public recreation site and possible access point.

5.94 Developed recreation areas at Jays Lake Landing, Frenchtown Park, Bussey Lake Park, and Guttenberg are allocated as recreation/intensive-use. The River of Lakes Campground, north of Jays Lake Landing, is a commercial recreation area operated under a lease agreement. It is also allocated as recreation/intensive-use.

5.95 The lock and dam 10 facility and levee have been allocated as project operations. The remaining Corps and FWS lands in pool 10 are allocated as wildlife management, and they are part of the Upper Mississippi National Wildlife and Fish Refuge. Ambro Landing, Glen Lake Landing, Bagley Bottoms Landing, and Plondtke's Slough Landing are all allocated as wildlife management because they serve primarily hunting and fishing boat launches. There are presently no plans to expand recreation use or to accommodate additional recreation use at these sites.

5.96 Several tracts of land in pool 11 below lock and dam 10 are in the St. Paul District and have been allocated for wildlife management and recreation/low-density. Remaining lands in pool 11 are in the Rock Island District and will be addressed by that district.



6. ENVIRONMENTAL ASSESSMENT

NEED FOR PROPOSED ACTION

6.01 In compliance with the requirements and intent of the National Environmental Policy Act of 1969 and applicable Corps of Engineers regulations, the St. Paul District prepared an environmental assessment for the proposed land use allocation plan. This assessment provides details of existing land allocations plus biological and socio-economic impacts of the proposed land allocations. Because the District Engineer determined that the proposed action would not have a significant impact upon the quality of the human environment, the St. Paul District prepared a Finding of No Significant Impact (FONSI) stating that an environmental impact statement is not required for this plan.

6.02 The FONSI and the assessment have been reviewed by the Regional Offices of the U.S. Environmental Protection Agency in Chicago, Illinois, and Kansas City, Missouri.

6.03 The following section comprises the environmental assessment for this land use plan.

6.04 As part of the 9-foot navigation channel project, the St. Paul District, Corps of Engineers, owns approximately 51,500⁽¹⁾ acres of land and water areas along the Upper Mississippi River system.

6.05 The St. Paul District is updating its master plan for public use development and resource management for these project lands. Because of funding and personnel limits, this master plan is being updated in three parts. Part I is a project description, review, and analysis. Part II is a land use allocation plan (LUAP) for project lands. These two parts are being released simultaneously. The LUAP has been developed in close coordination with the other major Federal landowning agency on the river, the U.S. Fish and Wildlife Service (FWS). The FWS is also developing its own master plan for the Upper Mississippi National Wildlife and Fish Refuge.

⁽¹⁾ No precise figure is available for Corps-owned "land" acres. The figures used in this environmental assessment are derived from measurements of the land areas shown on the land use allocation plan plates.

6.06 The next phase of the master plan (part II) will be specific development plans and recommendations for project management. The primary purpose of this phase is to guide management decisions concerning management and development of Corps land during and after the later phase.

PROPOSED ACTION

Land Use Allocation Plan

6.07 The proposed action is a land use allocation plan (LUAP) for Corps-owned project lands along the Upper Mississippi River in the St. Paul District. This assessment incorporates the LUAP document by treating it as a source of information about the planning process and as a source of information about the resources of the Upper Mississippi River.

Land Use Allocation Categories

6.08 The LUAP contains a detailed discussion of the planning process plus maps showing the proposed land use allocations. Table 6-1 shows the proposed land use allocations for the various land use categories in the LUAP. Table 6-2 shows the data by percentage per pool.

TABLE 6-1
ACRES⁽¹⁾ UNDER PROPOSED
LAND USE DESIGNATIONS

Pool	Project Operations	Intensive- Use	Low- Density	Natural Area	Wildlife Manager
SAF	10	0	0	0	0
1	5	0	0	0	0
Minnesota River	0	0	0	0	0
2(2)	20	20	125	0	55
St. Croix River	0	0	0	0	0
3	25	15	145	0	960
4	15	10	60	360	610
5	125	0	150	0	1,565
5A	85	55	20	25	1,325
6	45	5	40	30	380
7	25	10	75	0	1,415
8	65	525	210	25	2,515
9	0	175	215	45	12,335
10	5	30	105	0	1,970
Totals	425	845	1,145	485	25,130

⁽¹⁾ Land acres measured from LUAP plates. All figures are rounded to the nearest 5 acres.

⁽²⁾ Lake Rebecca is included in the pool 2 figures.



of the master plan (part III) will
ment plans and recommendations for
The primary purpose of the LUAP
ent decisions concerning management
Corps land during and after this

TABLE 6-2
PERCENTAGE OF AREA UNDER
PROPOSED LAND USE DESIGNATIONS

Pool	Project Operations	Recreation		Natural Area	Wildlife Management	Totals
		Intensive- Use	Low- Density			
SAF	100.0	0	0	0	0	100.0
1	100.0	0	0	0	0	100.0
Minnesota River	0	0	0	0	0	0
2	9.1	9.1	56.8	0	25.0	100.0
St. Croix River	0	0	0	0	0	0
3	0.8	0.5	4.6	0	94.1	100.0
4	1.4	1.0	5.7	34.1	57.8	100.0
5	6.8	0	8.1	0	85.1	100.0
5A	5.6	3.7	1.3	1.7	87.7	100.0
6	9.0	1.0	8.0	6.0	76.0	100.0
7	1.6	0.7	4.9	0	92.8	100.0
8	1.9	15.7	6.3	0.8	75.3	100.0
9	0	1.4	1.7	0.3	96.6	100.0
10	0.2	1.4	5.0	0	93.4	100.0
Totals	1.5	3.0	4.1	1.7	89.7	100.0

lan

ction is a land use allocation plan
hed project lands along the Upper
in the St. Paul District. This
ates the LUAP document by reference
formation about the plan and the
d as a source of information about
e Upper Mississippi River.

categories

ains a detailed discussion of the
us maps showing the proposed land
Table 6-1 shows the acreages
various land use categories in the
ows the data by percentage of area

TABLE 6-3
SUMMARY OF PROPOSED
LAND USE CHANGES(1)
(APPROXIMATE ACRES)

Existing Use(2) Proposed Designation(2)	WM NA	WM RIU	WM RLD	RLD WM
Pool				
SAF	0	0	0	0
1	0	0	0	0
Minnesota River	0	0	0	0
2	0	0	0	0
St. Croix River	0	0	0	0
3	0	0	85	10
4	360	0	35	10
5	0	0	10	35
5A	25	0	0	25
6	30	0	10	0
7	0	0	15	5
8	25	180	265	5
9	45	0	10	0
10	0	0	45	15
Total	485	180	475	105

(1) Because of the difficulty in measuring acreages in locations where the Corps owns a narrow strip of shoreline, this table does not reflect changes in such areas.

(2) Key to abbreviations: WM - Wildlife management
RIU - Recreation/intensive-use
NA - Natural area
RLD - Recreation/low-density

6.09 Table 6-3 summarizes essentially how the proposed land use allocation plan differs from existing land use on Corps lands in the various pools.

TABLE 6-1
PERCENTAGE OF AREA UNDER PROPOSED
LAND USE DESIGNATIONS

Intensive- Use	Low- Density	Natural Area	Wildlife Management	Totals
0	0	0	0	10
0	0	0	0	5
0	0	0	0	0
20	125	0	55	3,145
0	0	0	0	0
15	145	0	960	3,145
10	60	360	610	1,055
0	150	0	1,565	1,840
55	20	25	1,325	1,510
5	40	30	380	500
10	75	0	1,415	1,525
525	210	25	2,515	3,340
175	215	45	12,335	12,770
30	105	0	1,970	2,110
845	1,145	485	25,130	28,030

LUAP plates. All figures are rounded to the
in the pool 2 figures.

6. ENVIRONMENTAL ASSESSMENT

6.10 Existing land uses were determined from an interpretation of 1973 aerial photography and existing knowledge about uses on the river. For example, open sandy islands along the river channel were considered recreation/low-density areas because these islands are heavily used by recreationists; most wetland and forest areas were considered wildlife management lands; and existing recreational facilities were considered recreation/intensive-use areas.

6.11 The LUAP employs five land use categories:

- Project Operations (PO)
- Recreation/Intensive-Use (RIU)
- Recreation/Low-Density (RLD)
- Natural Areas (NA)
- Wildlife Management (WM)

6.12 Project Operations - These lands are required for siting or storing facilities, structures, or equipment necessary for authorized project purposes. This category includes lock and dam facilities, areas restricted for safety, major dredged material disposal sites, and Corps maintenance facilities. Recreational uses of such lands may be considered appropriate on a case-by-case basis.

6.13 The only areas designated project operations in the LUAP are sites of existing facilities or GREAT I-designated dredged material disposal sites. No new lands are designated project operations.

6.14 Recreation/Intensive-Use - These lands are allocated for use as developed public areas for intensive recreational activities, including areas for concessions and quasi-public development. An intensive-use recreation area is generally defined as an area where relatively traditional recreation predominates, such as a campground, picnic area, or swimming area. Such areas generally require extensive facility development and maintenance.

6.15 For the most part, the only areas designated recreation/intensive-use (RIU) in the LUAP are those with existing recreational facilities. The only exception is at Goose Island in pool 8, where undeveloped lands are designated RIU.

6.16 Recreation/Low-Density - These lands are allocated for non-intensive, low-density recreation use. Low-density or dispersed recreation (RLD) occurs generally throughout a large area and is not confined to a specific place. Such recreation includes

scattered, individual outdoor recreation activities. RLD areas normally are not identified with facilities or with areas of intense concentration. Typical activities on such areas include hiking, backpacking, hunting, picnicking, camping, horseback riding, and cross-country skiing.

6.17 The primary areas that the LUAP designates as RLD are islands and riparian areas along the river channel and buffer zones around RIU areas.

6.18 The primary purpose of designating RLD areas along the main channel of the river is to provide for boat-beaching, primitive camping, and picnicking for river recreationists. At selected sites of these locations, dredged material may be placed in the future to maintain open, sandy conditions for use by river recreationists.

6.19 In the RLD buffer zone around RIU areas, the only foreseeable development would be the construction of trails compatible with intensive recreation uses.

6.20 Natural Areas - These lands are allocated to preserve scientific, ecological, historical, archaeological, or aesthetic values and to protect threatened and endangered species. Public uses do not adversely affect the protected resources and are allowed on a case-by-case basis.

6.21 The LUAP designates two areas as natural areas. Part III of the master plan will present the plans to protect and manage these areas.

6.22 Wildlife Management - These lands are allocated for fish and wildlife and provide opportunities for wildlife/wildlands-related recreation. Hunting, fishing, trapping, bird watching, photography, and canoeing are examples of such recreation activities. Dispersed forms of recreation such as picnicking, camping, boating, swimming, cross-country skiing, and hiking are also permitted. However, wildlife and population needs take precedence over public recreation levels. Designated portions of such lands are reserved as waterfowl sanctuaries ("closed areas") during migration periods, limiting certain uses.

6.23 Ninety percent of the Corps-owned lands designated in the LUAP are wildlife management lands. Such areas are generally large tracts of forested wetlands interspersed with similar holding lands. Most of these Corps WM lands are managed by FWS as part of the Upper Mississippi National



and outdoor recreation activities. These lands are not identified with developed areas but with areas of intense group recreational activities on such lands including backpacking, hunting, primitive camping, and cross-country skiing.

Areas that the LUAP designates as riparian areas along the main channel of the river around RIU areas.

The purpose of designating RLD areas in the main channel of the river is to provide for primitive camping, and picnicking areas. At selected sites in some areas, dredged material may be used in open, sandy conditions desired for these sites.

Within the buffer zone around RIU areas, the development would be the creation of areas for intensive recreation use.

- These lands are allocated to provide for historic, ecological, historical, and aesthetic values and to protect endangered species. Public uses that do not affect the protected resources may be permitted on a case-by-case basis.

The plan designates two areas as natural areas. The future plan will present specific management actions to manage these areas.

Management - These lands are allocated to provide and provide opportunities for recreation-related recreation. Hunting, bird watching, photography, and other uses of such recreation. Other recreation such as primitive camping, cross-country skiing, and hunting is permitted. However, wildlife habitat management takes precedence over public use. Portions of such lands are designated as wildlife sanctuaries ("closed areas") to protect wildlife, limiting certain uses.

Most of the Corps-owned lands in the LUAP are wildlife management (WM). Generally large tracts of forest and land with similar holdings of the Corps WM lands are managed by the Upper Mississippi National Wildlife

and Fish Refuge, and they are likely to continue under such management. Lands designated WM but currently not in the refuge may be included in the refuge, subject to further planning and coordination between the Corps and FWS.

ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

Fish and Wildlife Resources

6.24 The proposed land use allocation plan is expected to have a positive impact upon the fish and wildlife resources of the Upper Mississippi River. Most of the effects of the LUAP should be relatively localized, centering on areas of proposed land use changes. In addition, the effects generally should be gradual changes caused by natural vegetative succession and by diminishing private use of public lands.

6.25 From a system-wide perspective, the cumulative effects, although beneficial, are not expected to be significant. Land use changes proposed by the LUAP affect only about 3.5 percent of the Corps-owned lands along the river (about 0.3 percent of the total land area in the Upper Mississippi floodplain in pools 1-10). Most of the impact of land use changes should be a gradual shift of recreational uses towards less sensitive areas and away from more valuable fish and wildlife habitats. No large-scale habitat alterations are expected from any of the proposed land use changes.

6.26 Two types of land use changes proposed in the LUAP would cumulatively account for most of the impacts on fish and wildlife resources: (1) the designation of main channel islands and riparian sites as low-density recreation lands and (2) the designation of shoreline areas with current private-use development as wildlife management lands.

6.27 Low-density recreation activities such as boat beaching and primitive camping are very popular along the main channel of the river. Such activities occur primarily on open or semi-open sandy areas created by past dredged material deposition. The impacts of these recreation activities themselves are generally minor, localized disturbances such as vegetation cutting, noise, and littering. Adverse effects on wildlife result from habitat degradation and reductions in habitat use because of human activity.

6. ENVIRONMENTAL ASSESSMENT

6.28 The LUAP proposes designating certain island and riparian sites along the main channel as low-density recreation areas to meet recreational demand for boat-beaching/primitive camping sites. Such areas were selected because they could accommodate low-density recreation with a minimum of adverse effects on other environmental values. Because these sites would eventually be managed to keep them in the semi-open condition preferred by recreationists, wildlife habitat values on these sites will remain relatively low.

6.29 The remaining riparian areas, including many old dredged material deposits, are designated wildlife management. These areas would generally be left as they are. The old dredged material deposit sites designated as wildlife management areas would be allowed to revegetate naturally. As these areas revegetate, their value as fish and wildlife habitat would generally improve.

6.30 In a number of backwater areas along the river (e.g., Robinson Lake, Peterson Lake, Spring Lake, Lake Onalaska, and the Raft Channel area), the Corps owns narrow strips of shoreline containing a considerable number of private-use structures such as boat docks and floating boathouses.

6.31 The private-use structures along these shoreline strips would eventually be removed under the grandfathering policy (see section 5.00 of the LUAP). The rate of removal of private structures would vary from site to site, primarily depending on the age of the owner and/or the state of disrepair of the structures. Within the next 30 years, a majority of the structures are likely to be removed as the owners die or the structures deteriorate. Also, if the adjacent property were sold, the structures would have to be removed because the permits would not be transferable.

6.32 Although removal of these structures would not be caused by the LUAP designation, such removal should have beneficial effects on fish and wildlife resources. Shoreline areas currently disturbed by human activity would tend to revegetate once the human use is reduced, improving habitat conditions for riparian wildlife.

6.33 The shoreline strips on all backwater lake-type areas are designated wildlife management. This designation should maintain these areas in a more natural state for wildlife habitat purposes as the

private-use structures gradually are removed.

6.34 Overall, boater use of the backwater expected to stabilize or decrease because of the designation of the shoreline as wildlife management coupled with the eventual removal of the private structures. This situation should benefit wildlife resources directly by reducing the boat disturbances on waterfowl (a problem noted for the canvasback duck on Lake Onalaska) and other aquatic wildlife. Indirectly, there are benefits from a reduction or elimination of the need for controlling aquatic vegetation or for dike construction to facilitate boater access to these areas.

6.35 In summary, the primary effects of the LUAP on Upper Mississippi River fish and wildlife would be to direct future recreational development toward areas where the recreation can be accommodated with less impact on the resources. The general trend would be to reduce recreation in these backwater areas where the habitat is more sensitive.

Recreation Impacts

6.36 No immediate, short-term recreation related impacts appear to be associated with the LUAP. Long-term impacts are difficult to ascertain. The LUAP should lead to improved Federal management of existing and future recreation resources on the Mississippi River.

6.37 Allocation of Federal lands for either low-density or intensive-use recreation would require a greater focus of available manpower and resources on those areas. In the process of implementing the LUAP guidelines would require a greater balance of diverse recreational opportunities as they are needed. Without the LUAP as a planning tool, this balance of resource needs, possibly recognized, would not have been systematically researched and organized.

6.38 The LUAP should also improve management coordination between the Corps and the States. Manpower and time previously devoted to management disputes should be available for new, more productive techniques for resource improvement and resource use. Elimination of intensively-used recreation resources (such as Island in pool 8) from the Upper Mississippi



structures gradually are removed.

boater use of the backwater areas is stabilize or decrease because of the the shoreline as wildlife management the eventual removal of the private-use This situation should benefit fish and rces directly by reducing the effects of ces on waterfowl (a problem of special canvasback duck on Lake Onalaska) and wildlife. Indirectly, there should be a reduction or elimination of pressures g aquatic vegetation or for dredging to ter access to these areas.

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AP should also improve management between the Corps and the FWS. The time previously devoted to settling sputes should be available to develop roductive techniques for habitat and resource use. Elimination of sed recreation resources (such as Goose 8) from the Upper Mississippi National

Wildlife and Fish Refuge should provide greater flexibility in planning for and implementation of new recreation resources.

6.39 As a result of work on the LUAP, District recreation planners have become more aware of the need to develop site plans for recreation beaching sites at dredged material disposal areas along the river. In conjunction with the interagency Great River Environmental Action Team (GREAT) studies, the LUAP identifies Federal low-density recreation lands that should be studied carefully for possible use as disposal-recreation enhancement areas.

Social Impacts

6.40 The primary source of social impacts related to the land use allocation plan would be the changes in recreational use of Federal lands. These impacts fall into three general categories: public access, social patterns, and market value. The impacts would be significant to the individuals experiencing them. To some these impacts would seem inequitable, but to others merely would seem to correct a presently inequitable situation that allows public property to be pre-empted for private use.

6.41 Public Access - There would be no change in accessibility for present private-use permit holders, for either shore-to-river access or river-to-shore access, unless the permitted structures require improvements or repairs. Because the grandfathering provisions would not allow modifications costing more than 25 percent of a structure's value, some structures may become unusable. Access for future owners of properties adjacent to Federal lands would be less convenient (possibly considerably so) than for the present, permit-holding owners. However, this lower accessibility is anticipated to be reflected in lower purchase prices of these adjacent properties.

6.42 Those who do not own property adjacent to Federal lands would experience no change in accessibility of the river from the land. Accessibility of public shore from the river would be somewhat improved because boaters would be more likely to perceive shore as public when it no longer contains obviously private structures or recreational uses that tend to make the land appear private.

6.43 Market Value - Knowledgeable realtors and appraisors consider permits for private use to be a very significant factor in the market values of

6. ENVIRONMENTAL ASSESSMENT

riverfront properties. Restrictions on permits and attendant publicity have already slowed past property sales in some areas. Properties presently benefitting from the increased market value caused by a permit range from recreational cabins to single-family homes valued at over \$100,000 and even more expensive condominiums. An estimated 350 to 500 properties would no longer have permits routinely transferred at the time of sale, and these properties would probably experience lowered market values. Although this change would be primarily an impact of the Federal policy on private use and not of the LUAP designation, designating many of the shoreline areas as wildlife management instead of low-density recreation may also affect property values.

6.44 Social Patterns - In addition to the consequences for individual property owners, changes in market value of these properties may make local tax revenues fluctuate. These fluctuations may change taxation patterns or affect the services that local governments provide.

6.45 Ownership of shorefront property often reflects social status, as well as recreational preferences. The prestige of shorefront property in some areas has been heightened by past Federal policies that permitted special private use of public land. A change in these policies would affect such social status.

6.46 Perceptions of private property rights and of the rights/obligations of the Federal Government to regulate public lands would continue to be sources of controversy.

Cultural Resources

6.47 Literature Search and Records Review - The St. Paul District is completing an archeological and historical literature search for the main stem of the Mississippi River from the Upper St. Anthony Falls pool in Minneapolis, Minnesota, to lock and dam 10 at Guttenberg, Iowa. This literature search has compiled more than 1,000 historically and architecturally significant structures plus more than 1,400 prehistoric archeological components. These components span the period from 11,500 B.C. up to the recent past. Historic site types range from early

French fur posts to bridges crossing Prehistoric sites include the villages, can burial mounds on the floodplains, terraces, of the river.

6.48 This literature search covers only sites along the river. Historic and archeological surveys have been completed for many of towns such as Wabasha and Red Wing, Minnesota; Crosse and Alma, Wisconsin; however, little archeological survey work has been done to the greater resource base. The University of Wisconsin-La Crosse has been focusing its the prehistory of the La Crosse area, University of Wisconsin-Madison has a project underway in the Prairie du Chien re

6.49 The key areas where the LUAP proposes land use were checked against the known cultural resources along the river. Except for two areas (Guttenberg in pool 8 and Abel Island in pool 10), no known in these areas.

6.50 General Cultural Resource Impacts - Part, the changes proposed in the LUAP converting the zoning from fish and management areas to low-density or intensive recreation areas. Recreation areas, especially of intensive use, can have a very adverse impact on archeological resources. Activities such as camping, picnicking, hunting, fishing, and horseback riding can have an adverse impact on archeological sites that are at the ground surface that are eroding out of the riverbank activity, especially in areas of loose, sand can quickly destroy the context of an archeological site. Loss of the data base can also be an adverse impact on campers and picnickers who collect prehistoric artifacts or who use metal detectors to locate and remove historic artifacts. If recreation designation usually assumes that areas will be developed for use. Construction of toilets, camp pads, roads, and boat landing can have an adverse impact upon cultural resources.

6.51 Some changes proposed in the LUAP have to convert recreation areas to fish and management use. While this change is compatible with the preservation of archeological resources, these conversions involve long (30,000 feet), narrow (from inches to a few feet) riparian strips of property. Since archeological sites can be quite large com



sts to bridges crossing the river. es include the villages, campsites, and n the floodplains, terraces, and bluffs

erature search covers only the known e river. Historic and architectural een completed for many of the river abasha and Red Wing, Minnesota, and La a, Wisconsin; however, little intensive survey work has been done to identify resource base. The University of osse has been focusing its efforts on y of the La Crosse area, while the Wisconsin-Madison has a multi-year y in the Prairie du Chien region.

as where the LUAP proposes changes in hecked against the known cultural sites r. Except for two areas (Goose Island Abel Island in pool 10), no sites are areas.

Cultural Resource Impacts - For the most nges proposed in the LUAP involve e zoning from fish and wildlife as to low-density or intensive-use s. Recreation areas, especially areas e, can have a very adverse impact upon resources. Activities such as hiking, cking, hunting, fishing, boating, and ng can have an adverse effect on ites that are at the ground surface or ing out of the riverbank. Human tially in areas of loose, sandy soil, troy the context of an archeological e data base can also be hastened by icnickers who collect or dig for ifacts or who use metal detectors to ove historic artifacts. Intensive-use gnation usually assumes that these eveloped for use. Construction for ads, roads, and boat landings also has ct upon cultural resources.

s proposed in the LUAP have been made eation areas to fish and wildlife . While this change is much more n the preservation of archeological e conversions involve long (7,200 to arrow (from inches to a few hundred trips of property. Since the size of tes can be quite large compared to the

width of the riparian strips, and since most of the strips are already quite developed, the beneficial effect of this zoning change on the preservation of archeological sites is much less significant than it would be if larger tracts of land were being converted.

6.52 Impacts from wildlife management range from beneficial impacts to adverse impacts that are less severe than those of recreational uses. Impacts from activities compatible with wildlife management (such as hunting, fishing, bird watching, and canoeing) can create some of the same results as impacts on archeological resources as other forms of recreation. However, these impacts are less severe because the intensity of use from these activities is far less. These activities tend to be more dispersed and occur less frequently at any one location. Areas designated as wildlife habitat or waterfowl sanctuaries provide a beneficial effect upon archeological resources because these areas restrict activity or access.

6.53 All areas of development for recreation use will be inventoried and assessed for significant resources prior to construction. All low-density recreation areas and intensive-use areas whether developed or not should also be inventoried for cultural resources. These inventory efforts on Federal lands are part of the St. Paul District's responsibilities under Executive Order 11593 and the 1980 amendments to the National Historic Preservation Act of 1966 (Public Law 89-665).

6.54 In accordance with Section 106 of the National Historic Preservation Act, the National Register of Historical Places has been consulted. As of November 16, 1982, only one site listed on the National Register would be impacted by changes suggested in the LUAP.

6.55 Archeological Resources on Goose Island - The Goose Island Archeological Site (Ve 502) and other sites on Goose Island in pool 8 are discussed below.

6.56 Goose Island Archeological Site (Ve 502) - This site was discovered in 1979 by Stefanija Harris of the U.S. Fish and Wildlife Service during a survey for a boat access area. Philip Salkin tested this site in 1979 and determined that there were three components at the site: a recent historic component, a prehistoric Oneota component, and a Middle Woodland to Late Woodland component. This site was placed on the National Register of Historic Places in July 1980.

6. ENVIRONMENTAL ASSESSMENT

6.57 Goose Island II Site (Ve 508) - This site is south of the Goose Island Landing site. It was originally located by Harris in 1979, and further work was done at this site in 1981 by James Gallagher of the University of Wisconsin-La Crosse. This site consists of a buried Woodland component, as indicated by ceramic material recovered from the site.

6.58 Hunter's Point Site (Ve 526) - This site was located during Gallagher's 1981 survey. Gallagher describes the site as a buried artifact scatter consisting of lithic debitage and ceramic material. The site dates to the Woodland Period.

6.59 House Site (Ve 527) - This site is a historic site consisting of a foundation and historic debris from the house. Its location is given on early maps (ca. 1894). The site is considered one of the earliest Euro-American occupations on Goose Island. Gallagher located this site during his 1981 survey of portions of southern Goose Island.

6.60 Wigwam Site (Ve 528) - The nature of this site is similar to that of Ve 526. The buried Woodland artifact scatter was discovered by Gallagher in 1981.

6.61 Old Field Site (Ve 529) - This site was reported by a local collector and has not been field-verified. It is reported to be a surface scatter of Woodland Period materials.

6.62 Perry Green Site (LC-55) - This site was reported by one of Gallagher's students. Gallagher's report of the 1979 field season of the La Crosse area archeological survey describes this site. The site is described as a historic Winnebago site, probably dating to 1810-1830, based upon a trade pipe that was collected from the surface of the site.

ALTERNATIVES

6.63 Each parcel of Corps-owned property in the project area was examined to determine its most appropriate land use designation. Theoretically, each parcel could have been designated as any of the five land use categories during the initial classification.

6.64 The lands designated project operations are the sites of existing project facilities such as locks and dams or major dredged material disposal sites. Since

such facilities are essentially permanent, they could not be designated for other uses. Areas already in such use were designated for project operations (PO).

6.65 Areas with existing recreational facilities or designated recreation/intensive-use (RLD), depend on the nature of the facilities. Since many are leased or have permanent facilities, it is inappropriate to designate them for any other use. The estimated effective lifetime is approximately 15 years).

6.66 What remained for the majority (approximately 98 percent) was the area designated as RLD or wildlife management (WM) (except for special areas that were designated as National Antiquities Act (NA) designation or consideration area). In most cases, topographic conditions dictated that the only feasible use was wildlife management. These sites were the large wetland and forest areas and the channel of the river that are inaccessible.

6.67 Table 6-4 lists the areas where no options are available and where the designations have the most potential impact in terms of existing uses of the river resources. Figures 6-1 to 6.93 and tables 6-5 to 6-26 discuss the impacts of the proposed and alternative designations at these sites.

Pool 3

6.68 Prescott Island - The LUA designates approximately 10 acres of an 80-acre island (Prescott Island) at river mile 811 as recreation/low-density. An alternative would be to designate the entire island as wildlife management. Table 6-4 outlines the impacts of the proposed and alternative designations.

Upper Pool 4

6.69 Lock and Dam 3 Peninsula - The LUA designates a 35-acre wooded peninsula immediately upstream of lock and dam (L/D) 3 as recreation/low-density. An alternative would be to designate this area as wildlife management. Table 6-6 outlines the impacts of the proposed and alternative designations.



ies are essentially permanent, these areas designated for other uses. No lands not such use were designated project P0).

with existing recreational facilities were recreation/intensive-use (RIU) or low-density (RLD), depending upon the facilities. Since many of these areas or have permanent facilities, it seemed e to designate them for any other use for ited effective lifetime of the plan ly 15 years).

remained for the majority of the lands ely 98 percent) was the alternative of these lands as RLD or wildlife management t for special areas that warrant natural designation or consideration as an RIU most cases, topographic or locational ictated that the only feasible designation e management. These sites were primarily wetland and forest areas off the main the river that are inaccessible from land.

le 6-4 lists the areas where feasible available and where the decisions could st potential impact in terms of altering es of the river resources. Paragraphs 6.68 tables 6-5 to 6-26 discuss and summarize ts of the proposed and alternative s at these sites.

scott Island - The LUAP designates ely 10 acres of an 80-acre wooded island (land) at river mile 811 as recreation/low-n alternative would be to designate this and as wildlife management. Table 6-5 e impacts of the proposed and alternative s.

nd Dam 3 Peninsula - The LUAP designates 5 35-acre wooded peninsula immediately below m (L/D) 3 as recreation/low-density. An e would be to designate this peninsula as nagement. Table 6-6 outlines the impacts osed and alternative designations.

TABLE 6-4
FEASIBLE ALTERNATIVES
LAND USE ALLOCATION PLAN

Pool	Area	LUAP Designation	Possible Alternative Designation
3	Prescott Island	RLD/WM	WM
Upper 4	L/D 3 Peninsula	RLD/WM	WM
Lower 4	Robinson Lake Shoreline	WM	RLD
Lower 4	Peterson Lake Shoreline	WM	RLD
5	Buffalo City Shoreline	RLD	WM
5	Spring Lake Shoreline	WM	RLD
5A	Mid-Pool 5A Shoreline	WM	RLD
6	L/D 6 Dike Island	RLD	WM
6	Trempealeau Wetland	RLD	WM
7	Mid-Pool 7 Shoreline	WM	WM/RLD
7	Dresbach Island	RLD	WM
7	Brice Prairie Shoreline	WM	RLD
7	French Island Shoreline	WM	RLD
8	Goose Island	RIU/RLD	RIU/RLD/WM
8	Brownsville Bay Shoreline	WM	RLD
8	Wildcat Creek Shoreline	WM	RLD
8	Shellhorn Shoreline	WM	RLD
9	Mid-Pool 9 Shoreline	WM	RLD
9	Lansing Shoreline	WM	RLD
10	Willies Landing Shoreline	RLD	WM
10	Jays Lake Landing Shoreline	RLD	WM
10	Hovie Island	RLD	WM
10	Abel Island Shoreline	RLD	WM

(1) Key to abbreviations: WM - Wildlife management
RIU - Recreation/intensive-use
RLD - Recreation/low-density

TABLE 6-5 - PRESCOTT ISLAND DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Future recreational development would likely be limited to the use of dredged material to form and slope a boat-beaching and primitive camping area.	Prescott Island would essentially be allowed to remain in its wooded state.
Potential alteration of 5-10 acres of floodplain forest habitat.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.
Potential loss of aquatic riprap habitat.	
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	

6. ENVIRONMENTAL ASSESSMENT

TABLE 6-6 - L/D 3 PENINSULA DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
The most likely development would be a recreation craft lockage waiting area.	The area would be left in its current natural state.
Potential disturbance of 1-5 acres of floodplain forest habitat.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	

TABLE 6-8 - PETERSON LAKE SHORELINE DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Private-use structures (approximately 30) would be removed under grandfathering procedures. Future public uses would emphasize wildlife values.	Private-use structures (approximately 30) would be removed under the grandfathering procedures. Future use would be enhanced beaching, biking, and camping areas.
There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance would likely continue at present levels.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline vegetation would result from recreational activities.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

Lower Pool 4

6.70 Robinson Lake Shoreline - The LUAP designates the approximately 6,000 feet of Corps-owned shoreline on Robinson Lake as wildlife management. An alternative would be to designate these areas as recreation/low-density. Table 6-7 outlines the impacts of the proposed and alternative designations.

TABLE 6-7 - ROBINSON LAKE SHORELINE DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Private-use structures (approximately 31) would be removed under grandfathering procedures. Future public uses would tend toward primitive, wildlife-oriented public uses.	Private-use structures (approximately 31) would be removed under the grandfathering procedures.
There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance impacts may be reduced.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline vegetation disturbances from recreational activities may occur.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

Pool 5

6.72 Buffalo City (Belvidere Slough) designates approximately 18,800 feet of Corps-owned shoreline at Buffalo City on Belvidere Slough as recreation/low-density. An alternative would be to designate this shoreline as wildlife management. Table 6-9 outlines the impacts of the proposed and alternative designations.

TABLE 6-9 - BUFFALO CITY SHORELINE DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Licensed/permitted private use would be removed under the grandfathering procedures. Greater pressure on existing boat accesses would occur.	Private-use structures would be removed under the grandfathering procedures. Greater pressure on boat accesses would occur.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.

6.71 Peterson Lake Shoreline - The LUAP proposes that the approximately 3,600 feet of Corps-owned shoreline on Peterson Lake be designated as wildlife management. The alternative would be to designate this shoreline as recreation/low-density. Table 6-8 outlines the impacts and alternative designations.

6.73 Spring Lake Shoreline - The LUAP proposes that the 8,500 feet of Corps-owned shoreline at Spring Lake be designated as wildlife management. The alternative would be to designate this shoreline as recreation/low-density. Table 6-10 outlines the impacts of the proposed and alternative designations.



PETERSON LAKE SHORELINE DESIGNATION IMPACTS

	Impact of Alternative Designation
(approximately under grand-future public wildlife values.	Private-use structures (approximately 30) would be removed under the grandfathering procedures. Future recreational use would be enhanced by boat-beaching, biking, and primitive camping areas.
ial reduction -bance impacts id other aquatic	Boat traffic disturbance impacts would likely continue near the present levels.
s would likely be vegetation.	Shoreline vegetation disturbances would result from recreational activities.
sources ly neral e management 6.52.	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.57.

TABLE 6-10 - SPRING LAKE SHORELINE DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Private-use structures would be removed under the grand-fathering procedures.	Private-use structures would be removed under the grand-fathering procedures.
There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance impacts may eventually be reduced.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline vegetation disturbances may result from recreational activities.
Future public use would involve more wildlife-oriented activities.	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52	

Pool 5A

City (Belvidere Slough) - The LUAP approximately 18,800 feet of Corps-owned Buffalo City on Belvidere Slough as low-density. An alternative would be to designate this shoreline as wildlife management. Table 6-11 outlines the impacts of the proposed and alternative designations.

6.74 Mid-Pool 5A - The LUAP designates some mid-pool riparian islands with old dredged material deposits (mile 733-736) as wildlife management. An alternative would be to designate certain areas on these islands as recreation/low-density. Table 6-11 outlines the impacts of the proposed and alternative designations.

TABLE 6-11 - MID-POOL 5A SHORELINE DESIGNATION IMPACTS

- BUFFALO CITY SHORELINE DESIGNATION IMPACTS

	Impact of Alternative Designation
vate use cedures. Greater boat accesses	Private-use structures would be removed under the grandfathering procedures. Greater pressure on existing boat accessess would occur.
are or a recreation 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.

Impact of Proposed Designation	Impact of Alternative Designation
These islands would be left to revegetate naturally, generally increasing their wildlife habitat value.	The designated areas would likely be maintained in an open, sandy condition, probably through use of dredged material, to benefit recreational uses such as boat beaching and primitive camping.
Existing recreational activities such as boat beaching and camping would be allowed to continue as long as wildlife values are not threatened.	Wildlife habitat values would remain low because of habitat disturbance and human activity.
	No cultural resources are known on these islands. Any unrecorded sites on these islands would be buried beneath dredged material.

Pool 6

Shoreline - The LUAP proposes that of Corps-owned shoreline along Spring Lake be designated as wildlife management. An alternative would be to designate this shoreline as low-density. Table 6-10 outlines the impacts of the proposed and alternative designations.

6.75 L/D Dike Island - The LUAP designates part of a 15-acre wooded and meadow island above the lock and dam 6 dike as recreation/low-density. An alternative would be to designate this entire island as wildlife management. Table 6-12 outlines the impacts of the proposed and alternative designations.

6. ENVIRONMENTAL ASSESSMENT

TABLE 6-12 - L/D 6 DIKE ISLAND DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Recreational development on the island would likely be a lockage waiting area for recreational craft. Boat beaching and primitive camping activities would likely continue.	The island would be left in its natural state.
Minor alteration of wooded and meadow habitat (less than 5 acres).	No change in existing recreation uses would be expected.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.

6.76 Trempealeau Wetland - The LUAP designates a 15-acre wetland area behind the upper guidewall at lock and dam 6 as recreation/low-density. An alternative would be to designate this area as wetland wildlife management. Table 6-13 outlines the impacts of the proposed and alternative designations.

TABLE 6-13 - TREMPEALEAU WETLAND DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
This wetland is being considered for recreational development by local unit(s) of government. Development would require approval by Federal and State agencies.	The wetland would likely remain in its current state.
Recreational development would likely be limited to boat mooring and other related resource development. Wildlife and fishery habitat values of the area would likely be severely reduced.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	

Pool 7

6.77 Mid-Pool 7 Shoreline - The LUAP proposes designating the mid-pool Wisconsin shoreline of the main channel at miles 705-710 as wildlife management. An alternative would be to designate certain areas along this shoreline as recreation/low-density. Table 6-14 outlines the impacts of the proposed and alternative designations.

TABLE 6-14 - MID-POOL 7 SHORELINE DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
The area would be left in its natural state. Any old dredged material deposits would revegetate naturally, generally improving their wildlife habitat value.	Designated areas would be maintained in an open, condition for recreational activities such as boat and primitive camping.
Existing boat beaching and primitive camping uses could continue as long as wildlife values were not threatened.	Wildlife habitat value areas would remain low habitat disturbances a activity.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	Potential adverse impact dam and aquatic riprap
	No cultural resources known at this site. For general description of impacts, see paragraph

6.78 Dresbach Island - The LUAP designates a strip areas of revegetating dredged material wooded habitat on the upper and lower ends of Island as recreation/low-density. An alternative would be to designate these areas as wildlife management. Table 6-15 outlines the impacts of the proposed and alternative designations.

TABLE 6-15 - DRESBACH ISLAND DESIGNATION IMPACTS

Impact of Proposed Designation	Impact of Alternative Designation
Future recreational development that occurred would take the form of additional boat beaching and primitive camping area, plus a recreational craft lockage waiting area.	The areas would be left alone. The revegetating material would likely be a grass and forb stage and small trees stage of 15 years, changing its habitat values.
Developed areas would have low wildlife habitat values because of habitat alteration and human activity. Human activity may also adversely affect adjacent undeveloped portions of the island.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	

6.79 Brice Prairie Shoreline and French Island - The LUAP designates approximately 20,500 feet of owned shoreline on Lake Onalaska at Brice Prairie and French Island as wildlife management. An alternative would be to designate these areas as recreation/low-density. Table 6-16 outlines the impacts of the proposed and alternative designations.



TABLE 6-14 - MID-POOL 7 SHORELINE DESIGNATION IMPACTS

Impact of Alternative Designation	Impact of Proposed Designation
Designated areas would likely be maintained in an open, sandy condition for recreational activities such as boat beaching and primitive camping.	Private-use structures (approximately 124) would be removed under the grandfathering procedures.
Wildlife habitat values on these areas would remain low because of habitat disturbances and human activity.	There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life. Of special concern at Lake Onalaska is the need to reduce adverse disturbance impacts on canvasback ducks.
Potential adverse impacts on wing dam and aquatic riprap habitat.	Shoreline disturbances would likely be reduced, allowing revegetation.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52

Goose Island - The LUAP designates shoreline areas of revegetating dredged material and habitat on the upper and lower ends of Dresbach as recreation/low-density. An alternative would be to designate these areas as wildlife management. Table 6-15 outlines the impacts of the proposed and alternative designations.

TABLE 6-15 - DRESBACH ISLAND DESIGNATION IMPACTS

Impact of Alternative Designation	Impact of Proposed Designation
The areas would be left as they are. The revegetating dredged material would likely change from a grass and forb stage to a shrub and small tree stage over the next 15 years, changing its wildlife habitat values.	Additional areas designated RIU would be subject to future development pressures, most likely for additional campground area, picnic area, and boat access.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	Wildlife values would be degraded as additional area is developed.
	Additional areas designated RLD would likely be developed for hiking and cross-county skiing trails. Impacts on wildlife are likely to be relatively minor.

Brice Prairie Shoreline and French Island - The LUAP designates approximately 20,500 feet of Corps shoreline on Lake Onalaska at Brice Prairie and French Island as wildlife management. An alternative would be to designate these areas as recreation/low-density. Table 6-16 outlines the impacts of the proposed and alternative designations.

TABLE 6-16 - BRICE PRAIRIE AND FRENCH ISLAND SHORELINE DESIGNATION IMPACTS

Impact of Alternative Designation	Impact of Proposed Designation
Private-use structures (approximately 124) would be removed under the grandfathering procedures.	Private-use structures (approximately 124) would be removed under the grandfathering procedures.
Boat traffic disturbance impacts would likely continue at current levels.	There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life. Of special concern at Lake Onalaska is the need to reduce adverse disturbance impacts on canvasback ducks.
Shoreline vegetation disturbances caused by recreational activities would likely continue.	Shoreline disturbances would likely be reduced, allowing revegetation.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52

Pool 8

6.80 Goose Island - The LUAP designates additional areas at Goose Island as recreation/intensive-use and recreation/low-density. An alternative would be to reduce the area committed to recreation and to increase the area designated as wildlife management. Table 6-17 outlines the impacts of the proposed and alternative designations, except for the cultural resource impacts, which are outlined in paragraphs 6.81 through 6.84.

TABLE 6-17 - GOOSE ISLAND DESIGNATION IMPACTS

Impact of Alternative Designation	Impact of Proposed Designation
Areas available for future recreational development would be reduced.	Additional areas designated RIU would be subject to future development pressures, most likely for additional campground area, picnic area, and boat access.
Potential impacts on wildlife habitat would be lessened.	Wildlife values would be degraded as additional area is developed.
	Additional areas designated RLD would likely be developed for hiking and cross-county skiing trails. Impacts on wildlife are likely to be relatively minor.

6.81 As the result of a previous lease review, coordination has been initiated with the Wisconsin State Historic Preservation Office concerning the impacts of recreational use on the Goose Island Archeological Site (Ve 502) and on the other sites at the southern end of Goose Island.

6. ENVIRONMENTAL ASSESSMENT

6.82 La Crosse County plans to develop an existing boat landing at the south end of Goose Island. Sites Ve 526 and Ve 527 are in the vicinity of the access road and ramp. Development at this location would minimize or avoid impact on these sites. Site Ve 527, the House Site, would be avoided by diverting the road around the site. Impact at Site 526, the Hunter's Point Site, would be minimized by limiting major development, such as the parking lot, to the eastern part of the southern tip of Goose Island where test units did not contain cultural material. The development plan and the county construction plan would be reviewed by the Wisconsin State Historic Preservation Office before implementation.

6.83 Once the Hunter's Point Landing is developed, the County Line boat ramp that is now adversely affecting the Goose Island Archeological Site (Ve 502), a National Register property, would be closed to vehicular traffic. This closing would remove the major activities that cause the adverse impacts now affecting this site: boat launching and vehicle parking in undesignated areas.

6.84 All Corps of Engineers property on Goose Island zoned as intensive-use or low-density recreation will be surveyed for cultural resources and all sites that have not been tested will be assessed for their National Register potential. If a number of the sites located on Goose Island appear to qualify for the National Register, the island's archeological resources may be submitted as a National Register District. At that time, the interpretive potential of these resources would also be considered.

6.85 Brownsville Bay Shoreline - The LUAP designates the approximately 2,500 feet of Corps-owned shoreline at Brownsville Bay (mile 690) as wildlife management. An alternative would be to designate this area of shoreline as recreation/low-density. Table 6-18 outlines the impacts of the proposed and alternative designations.

6.86 Wildcat Creek Shoreline - The LUAP designates approximately 12,000 feet of Corps-owned shoreline below Wildcat Creek (mile 688) as wildlife management. An alternative would be to designate this shoreline as recreation/low-density. Table 6-19 outlines the impacts of the proposed and alternative designations.

TABLE 6-18 - BROWNSVILLE BAY SHORELINE DESIGNATION

Impact of Proposed Designation	Impact of Alternative
Private-use structures (approximately 27) would be removed under the grandfathering procedure.	Private-use structures (approximately 27) would be removed under the grandfathering procedure.
There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance impacts may be reduced.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline disturbances would likely be reduced, allowing revegetation.
Recreational uses in the future would be more low density, wildlife oriented.	No cultural resources known at this site.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	No cultural resources known at this site.

TABLE 6-19 - WILDCAT CREEK SHORELINE DESIGNATION

Impact of Proposed Designation	Impact of Alternative
Private-use structures (approximately 31) would be removed under the grandfathering procedures.	Private-use structures (approximately 31) would be removed under the grandfathering procedures.
There may be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance impacts may be reduced.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline disturbances would likely be reduced, allowing revegetation.
Future public use of the shoreline would be directed towards more low-density wildlife-oriented uses.	No cultural resources known at this site.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	No cultural resources known at this site.

TABLE 6-20 - SHELLHORN SHORELINE DESIGNATION

Impact of Proposed Designation	Impact of Alternative
Private-use structures (approximately 24) would be removed under the grandfathering procedures.	Private-use structures (approximately 24) would be removed under the grandfathering procedures.
There should be an eventual reduction in boat traffic disturbance impacts on waterfowl, fish, and other aquatic life.	Boat traffic disturbance impacts may be reduced.
Shoreline disturbances would likely be reduced, allowing revegetation.	Shoreline disturbances would likely be reduced, allowing revegetation.
Future public use of the shoreline would be directed towards more low-density wildlife-oriented uses.	No cultural resources known at this site.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.	No cultural resources known at this site.



VILLE BAY SHORELINE DESIGNATION IMPACTS

	Impact of Alternative Designation
imately	Private-use structures (approximately 27) would be removed under the grandfathering procedures.
tion acts quatic	Boat traffic disturbance impacts may be reduced.
likely be	Shoreline vegetation disturbances caused by recreational activities are likely to occur.
	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

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T CREEK SHORELINE DESIGNATION IMPACTS

	Impact of Alternative Designation
imately	Private-use structures (approximately 31) would be removed under the grandfathering procedures.
tion acts quatic	Boat traffic disturbance impacts may be reduced.
likely be	Shoreline vegetation disturbances caused by recreational activities may occur.
ine low-	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

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ph 6.52.

ORN SHORELINE DESIGNATION IMPACTS

	Impact of Alternative Designation
ately	Licensed/permitted private-use structures would be removed under the grandfathering procedures.
ction acts quatic	Boat traffic disturbance impacts may be reduced.
ely be	Shoreline vegetation disturbances caused by recreational activities may continue.
ine low-	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

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fe
h 6.52.

6.87 Shellhorn Shoreline - The LUAP designates approximately 14,000 feet of Corps-owned shoreline in the Shellhorn area (mile 683) as wildlife management. An alternative would be to designate this shoreline as recreation/low-density. Table 6-20 outlines the impacts of the proposed and alternative designations.

Pool 9

6.88 Mid-Pool 9 Shoreline - The LUAP designates much of the shoreline in mid-pool (miles 665.5-670) as wildlife management. An alternative would be to designate certain sites along this shoreline as recreation/low-density. Table 6-21 outlines the impacts of the proposed and alternative designations.

6.89 Lansing Shoreline - The LUAP designates approximately 3,000 feet of Corps-owned shoreline at Lansing as wildlife management. An alternative would be to designate this area as recreation/low-density. Table 6-22 outlines the impacts of the proposed and alternative designations.

Pool 10

6.90 Hovie Island - The LUAP designates Hovie Island at mile 622.5 as recreation/low-density. An alternative would be to designate the island as a wildlife management area. Table 6-23 outlines the impacts of the proposed and alternative designations.

6.91 Jays Lake Landing Shoreline - The LUAP designates approximately 3,000 feet of Corps-owned shoreline at Jays Lake Landing (mile 622) as recreation/low-density. An alternative would be to designate this shoreline as wildlife management. Table 6-24 outlines the impacts of the proposed and alternative

6.92 Willies Landing Shoreline - The LUAP designates approximately 2,000 feet of Corps-owned shoreline at Willies Landing (mile 621) as recreational low-density. An alternative would be to designate this area as wildlife management. Table 6-25 outlines the impacts of the proposed and alternative designations.

6.93 Abel Island Shoreline - The LUAP designates approximately 6,500 feet of Corps-owned shoreline on Abel Island (miles 617-619) as recreation/low-density. An alternative would be to designate this shoreline area as wildlife management. Table 6-26 outlines the impacts of the proposed and alternative designations.

6. ENVIRONMENTAL ASSESSMENT

TABLE 6-21 - MID-POOL 9 DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Shoreline areas would be left in their natural state. Existing low-density recreation uses would be allowed to continue unless wildlife habitat values were threatened.	Areas designated RLD would likely be developed for low-density recreational activities such as boat beaching and primitive camping.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52	Potential alternation of small areas of floodplain forest habitat.
	Potential impacts on wing dam habitat.
	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

TABLE 6-22 - LANSING SHORELINE DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Private-use structures (approximately 19) would be removed under the grandfathering procedures.	Private-use structures (approximately 19) would be removed under the grandfathering procedures.
Shoreline disturbances should be reduced, allowing some revegetation. Boat traffic impacts on aquatic life may be reduced.	Boat traffic impacts on aquatic life likely to remain the same.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.52.	Shoreline disturbances from recreational activity are likely to continue.
	No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.

TABLE 6-23 - HOVIE ISLAND DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Some portions of the island would likely be developed for low-density recreational uses such as boat beaching and primitive camping.	The island would be left in its natural state to meet the public needs for wildlife-oriented activities.
Potential alteration of small areas of floodplain forest habitat.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife management impacts, see paragraph 6.52.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	

TABLE 6-24 - JAYS LAKE LANDING SHORELINE DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Private-use structures (approximately 32) eventually would be removed under the grandfathering policy.	Private-use structures (approximately 32) would usually be removed under grandfathering procedures.
Boat traffic impacts on aquatic life likely to remain at about current levels.	Shoreline disturbances reduced, allowing some
Shoreline disturbances from recreational activity likely to remain the same.	Boat traffic impacts on life may be reduced.
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.52.

TABLE 6-25 - WILLIES LANDING SHORELINE DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Private-use structures (approximately 42) would be removed under the grandfathering procedures.	Private-use structures (approximately 42) would be removed under the grandfathering procedures.
Shoreline disturbances from recreational activity likely to remain the same.	Shoreline disturbances reduced, allowing some
No cultural resources are known at this site. For a general description of recreation impacts, see paragraph 6.51.	Boat traffic impacts on life may be reduced.
	Unrecorded cultural resources would remain relatively undisturbed. For a general description of recreation impacts, see paragraph 6.52.

TABLE 6-26 - ABEL ISLAND SHORELINE DESIGNATION IMPACTS

<u>Impact of Proposed Designation</u>	<u>Impact of Alternative Designation</u>
Licensed/permitted private-use structures would be removed under the grandfathering procedures.	Private-use structures (approximately 29) would be removed under the grandfathering procedures.
Boat traffic impacts on aquatic life likely to remain the same.	Boat traffic impacts on life may be reduced.
Three groups of burial mounds were recorded on Abel Island; however, these have since been destroyed. Associated habitation sites may still exist on the island. See paragraph 6.51 for a general description of recreation impacts.	For a general description of life management impacts, see paragraph 6.52.



6-24 - JAYS LAKE LANDING SHORELINE DESIGNATION IMPACTS

<u>Designation</u>	<u>Impact of Alternative Designation</u>
Structures (approximately 32) would be removed under the grandfathering procedures.	Private-use structures (approximately 32) would eventually be removed under the grandfathering procedures.
Shoreline disturbances from recreational activities would remain the same.	Shoreline disturbances should be reduced, allowing some revegetation.
Boat traffic impacts on aquatic life would remain the same.	Boat traffic impacts on aquatic life may be reduced.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.52.

TABLE 6-25 - WILLIES LANDING SHORELINE DESIGNATION IMPACTS

<u>Designation</u>	<u>Impact of Alternative Designation</u>
Structures (approximately 42) would be removed under the grandfathering procedures.	Private-use structures (approximately 42) would be removed under the grandfathering procedures.
Shoreline disturbances from recreational activities would remain the same.	Shoreline disturbances should be reduced, allowing some revegetation.
Boat traffic impacts on aquatic life would remain the same.	Boat traffic impacts on aquatic life may be reduced.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.52.

TABLE 6-26 - ABEL ISLAND SHORELINE DESIGNATION IMPACTS

<u>Designation</u>	<u>Impact of Alternative Designation</u>
Private-use structures (approximately 29) would be removed under the grandfathering procedures.	Private-use structures (approximately 29) would be removed under the grandfathering procedures.
Shoreline disturbances from recreational activities would remain the same.	Shoreline disturbances should be reduced, allowing some revegetation.
Boat traffic impacts on aquatic life would remain the same.	Boat traffic impacts on aquatic life may be reduced.
Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.51.	Unrecorded cultural resources would remain relatively undisturbed. For a general description of wildlife impacts, see paragraph 6.52.

COORDINATION

6.94 The proposed land use allocation plan has been extensively coordinated with the U.S. Fish and Wildlife Service (especially with the Upper Mississippi River Wild Life and Fish Refuge), which shares management of this portion of the river with the Corps of Engineers.

6.95 The LUAP also has been coordinated with the Wisconsin Department of Natural Resources, Minnesota Department of Natural Resources, Iowa Conservation Commission, and the Minnesota-Wisconsin Boundary Area Commission.

6.96 This environmental assessment and the draft LUAP have been submitted to the State Archeologists and State Historic Preservation Officers in Wisconsin, Iowa, and Minnesota. Copies have also been provided to the National Park Service and the Advisory Council on Historic Preservation.

6.97 Public workshops were held in St. Paul and Wabasha, Minnesota, and in La Crosse and Prairie du Chien, Wisconsin in November 1980. Additional workshops were held during August 1982 in Red Wing and Winona, Minnesota, in Onalaska, La Crosse, and Prairie du Chien, Wisconsin, and in Lansing, Iowa.

6.98 Public meetings were held in Winona, La Crosse, and Lansing to review the draft LUAP.

COMPLIANCE WITH ENVIRONMENTAL PROTECTION STATUTES

6.99 This section discusses how the proposed action complies with various environmental protection statutes and future compliance actions that may be required.

National Environmental Policy Act (NEPA) of 1969

6.100 This assessment and the associated finding of no significant impact (FONSI) fulfill the requirements of NEPA. Full compliance with NEPA will be attained when the District Engineer signs the FONSI.

Archeological and Historic Preservation Act

6.101 The proposed action is in full compliance with this statute.

6. ENVIRONMENTAL ASSESSMENT

Fish and Wildlife Coordination Act

6.102 The proposed action has been thoroughly coordinated with the U.S. Fish and Wildlife Service, especially with the Upper Mississippi National Wildlife and Fish Refuge. The proposed action is a result of coordinated effort between the St. Paul District and the U.S. Fish and Wildlife Service to develop compatible plans for management of Federal lands on the Upper Mississippi River.

Endangered Species Act of 1973

6.103 The proposed LUAP has been coordinated with the U.S. Fish and Wildlife Service to determine project impacts on endangered and threatened species. The Fish and Wildlife Service has determined that the proposed plan would have no impact upon protected species or their habitats.

Clean Water Act of 1971

6.104 Because the proposed land allocation plan proposes no specific discharge of dredged or fill material into waters of the United States, this statute does not apply to the proposed action (the LUAP). Future, specific proposed recreational developments resulting from the land use allocation plan may entail such discharges, however. These discharges would be evaluated in compliance with Section 404(b)(1) guidelines (40 CFR 230).

National Historic Preservation Act of 1966, Amended by Public Law 96 - 515

6.105 The proposed action is in full compliance with this statute.



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST
CHICAGO, ILLINOIS 60604

02 AUG 1983

Colonel Edward G. Rapp
District Engineer
St. Paul District, Corps of Engineers
1135 U.S. Post Office and Custom House
St. Paul, Minnesota 55101

Dear Colonel Rapp:

The U.S. Environmental Protection Agency, in accordance with its responsibilities under Section 309 of the Clean Air Act, has completed an environmental assessment and finding of no significant impact for the Upper Mississippi River Land Use Allocation Plan for the Upper Mississippi River in Minnesota, Wisconsin and Iowa.

Based on our review of these documents, we conclude that this action will not affect human health nor significant environmental resources.

Sincerely yours,

for/ James P. Hooper
Barbara Taylor Backley, Chief
Environmental Review Branch
Planning and Management Division

FIGURE 6-1. LETTER OF CONCURRENCE FROM



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST
CHICAGO, ILLINOIS 60604



REPLY TO ATTENTION OF:

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
1138 U. S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101

REPLY TO
ATTENTION OF:

Environmental Resources Branch
Planning Division

FINDING OF NO SIGNIFICANT IMPACT

In compliance with the National Environmental Policy Act of 1969, the St. Paul District, Corps of Engineers, has assessed the environmental impacts of the following project:

UPPER MISSISSIPPI RIVER LAND USE ALLOCATION PLAN MASTER PLAN FOR PUBLIC USE DEVELOPMENT IOWA, MINNESOTA, AND WISCONSIN

This land use plan is intended to provide practical, balanced guidance to future Federal land use management decisions for the Upper Mississippi River. The plan allocates Corps-owned lands along the river within the St. Paul District to one of the five land use categories described in section 2.00 of the environmental assessment.

This finding of no significant impact considers the following project impacts: moderate benefits to fish and wildlife through the gradual shifting of recreational pressures to areas with less sensitive habitat, moderate benefits to recreation through identification of the most appropriate and useful areas for recreation development, minor site-specific adverse impacts on fish and wildlife from recreation development, moderate adverse social impact from a gradual alteration of traditional private-use patterns on public lands, and continued coordination with Federal and State agencies and with the public (see the assessment for more information.)

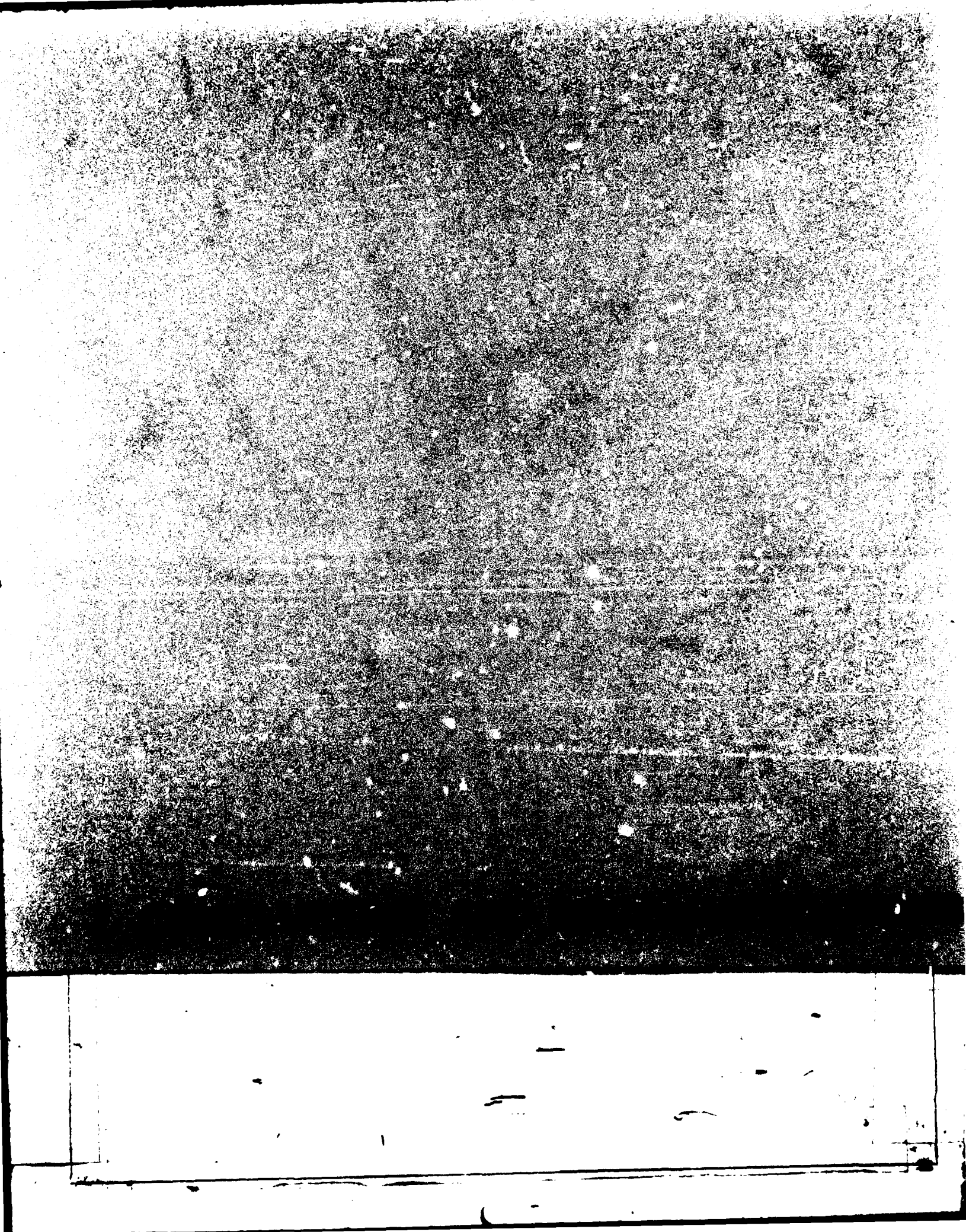
The environmental review indicates that the proposed action does not constitute a major Federal action with a significant impact on the quality of the human environment. Therefore, an environment impact statement will not be prepared.

11 Aug 83
Date

Archie M. Dering, LTC, CE, DDE
Edward G. Rapp
Colonel, Corps of Engineers
District Engineer

F CONCURRENCE FROM EPA.

FIGURE 6-2. FINDING OF NO SIGNIFICANT IMPACT.



7. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

7.01 With the continuing cooperation of the Army Corps of Engineers and Wildlife Service, the St. Paul District Engineers, has collected and evaluated available data from a wide range of pertinent sources. This inventory data, plus the contribution of the interested public, concerned organizations, and governmental agencies, has led to the development of an allocation plan for Federal lands along the Mississippi River in the St. Paul District.

7.02 This land use allocation plan identifies the highest and best use of Federal lands and provides a framework for future management actions and detailed planning studies. The allocations in this plan are a balanced approach for meeting present and future public use demands on Federal lands while maintaining inherent values for fish and wildlife management and for continued river navigation.

7.03 The cooperative planning process between the Army Corps and the FWS to prepare this plan has significantly improved the working relationship between these managing agencies. This interagency cooperation, when combined with the allocation plan, will result in improved management of public lands along the Upper Mississippi River.

RECOMMENDATIONS

7.04 The following recommendations related to the use allocation plan should be implemented:

1. This plan will serve as the basis for the preparation of detailed, site-specific planning and management actions such as the master plan, the Corps operational plan, and the Fish and Wildlife Service management plan.

2. Over time, Federal policies and river conditions will change, as will the river and its uses. As significant changes occur, land use allocation management policies will need to be revised to optimize benefits to the public. Periodic supplements to this allocation plan will be required in the future to keep this land use allocation plan current and effective.



S

continuing cooperation of the U.S. Fish Service, the St. Paul District, Corps of as collected and evaluated the best from a wide range of pertinent sources. y data, plus the contributions of the ublic, concerned organizations, and agencies, has led to this land use an for Federal lands along the Upper iver in the St. Paul District.

nd use allocation plan identifies the est use of Federal lands and provides a r future management actions and more ning studies. The allocations shown in a balanced approach for meeting current ublic use demands on Federal lands while inherent values for fish and wildlife for continued river navigation.

erative planning process used by the he FWS to prepare this plan has y improved the working communications se managing agencies. This Federal operation, when combined with the actual n, will result in improved management of long the Upper Mississippi River.

ATIONS

wing recommendations related to the land plan should be implemented:

plan will serve as the basis for of detailed, site-specific Federal management actions such as part III of lan, the Corps operational management Fish and Wildlife Service refuge master

time, Federal policies and laws will ill the river and its users. When hanges occur, land use allocations and policies will need to be adjusted to nefits to the public. Therefore, this allocation plan will be developed to keep this land use allocation plan ffective.

3. Management relationships between the St. Paul District and the U.S. Fish and Wildlife Service will be further articulated to maximize management efficiency and effectiveness. This updating and streamlining of Federal management roles will recognize the following:

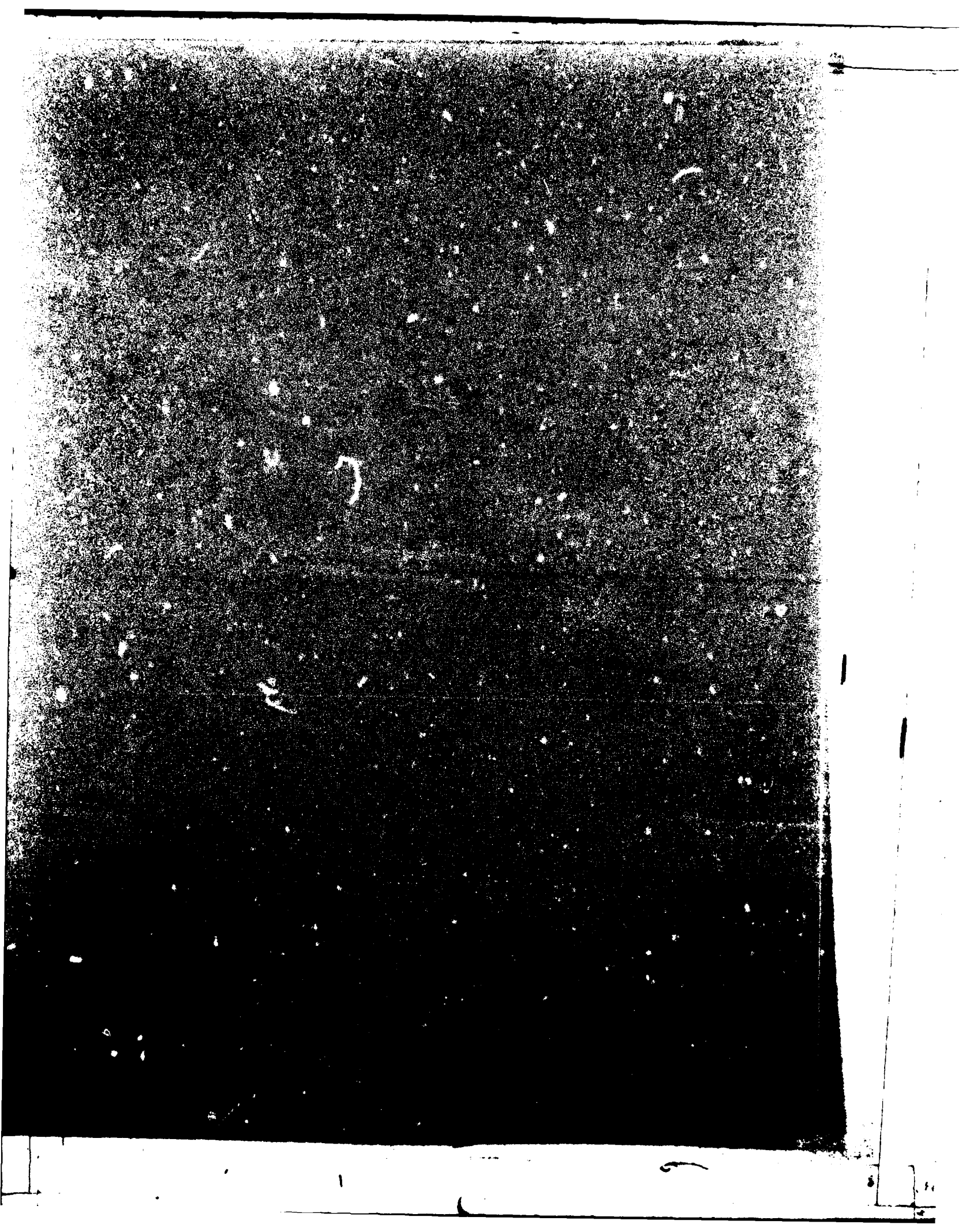
a. Proposed changes of the land use allocations will be reviewed by both Federal agencies. Each proposal will be considered on an individual basis.

b. The Corps and the FWS will coordinate closely in making management decisions about wildlife management lands under the guiding principles identified in the 1963 Cooperative Agreement. However, the Corps will not prepare detailed management plans for lands that are allocated for wildlife management in the Upper Mississippi National Wildlife and Fish Refuge. The Fish and Wildlife Service will prepare management plans for these lands.

c. Lands allocated in this plan for low-density recreation will be managed actively by the Corps and the FWS to serve the intended public recreation uses (as defined earlier in the land use allocation definitions).

d. The land use allocations will be used by resource managers to determine future dredged material placement sites. As a general rule, the Corps will not place material, except under emergency conditions, on lands allocated for other than project operations or low-density recreation. Placement of sand on land allocated as low-density recreation area should not diminish that site's suitability for recreation. An exception to this rule is placement of material on wildlife management lands when such action is requested by the Fish and Wildlife Service. Part III of the Corps master plan will address site-specific recreation enhancement in general.

4. The Corps will review and, as appropriate, incorporate public comments received during this study when it updates the pool regulation manuals. (Pool regulation manuals are periodically updated by the Corps on a pool-by-pool basis.)



8. PLAN PLATES



INTRODUCTION TO MAP PLATES

8.01 Sixty-six map plates following this summary delineate the 9-foot navigation channel project area from the Upper St. Anthony Falls pool in Minneapolis, Minnesota, to lock and dam 10 in Guttenberg, Iowa. These plates are all identified by river pool and river mile. The map plates have been developed from U.S. Geological Survey topographic maps, with the land-water interface (boundary) revised according to 1977 aerial photographs. The plates are at a scale of 1 inch equals 2,000 feet (approximately 2-1/2 inches equals 1 mile).

8.02 Figure 8-1 (index to map plates) precedes the maps and provides a geographic reference for specific plate locations.

8.03 The maps show Corps and Fish and Wildlife Service ownership as accurately as possible at the scale used. The map plates are not intended to serve as real estate documents, although the best available real estate information was used to prepare them.

8.04 The maps use different colors for each land use allocation category. Allocations on Fish and Wildlife Service lands use half-tone screened version of the same colors that illustrate allocations on Corps land.

8.05 The maps show proposed refuge boundaries to delineate how most lands of the two agencies are in the Upper Mississippi National Wildlife and Fish Refuge.

8.06 The maps also show parks, access points, and commercial recreation sites on Federal land.

8. PLAN PLATES

Index to Plates

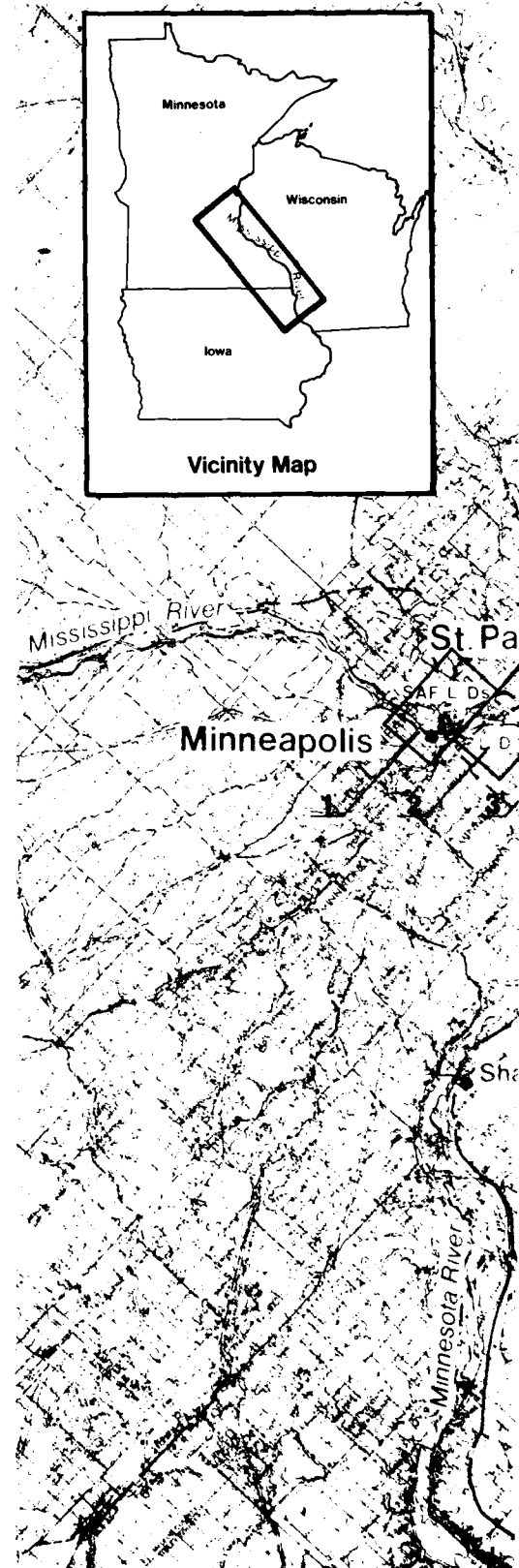
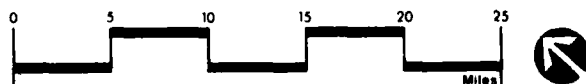
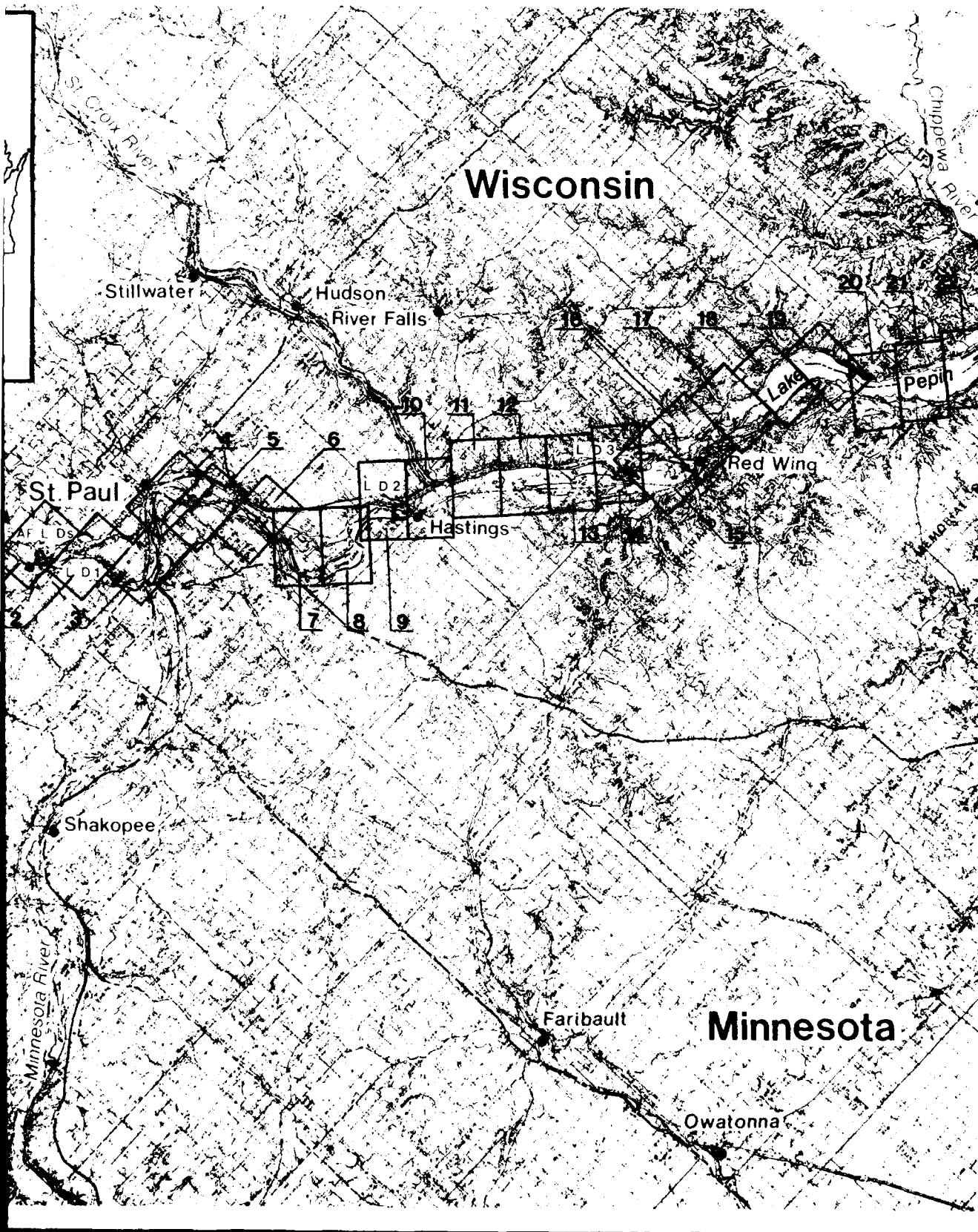
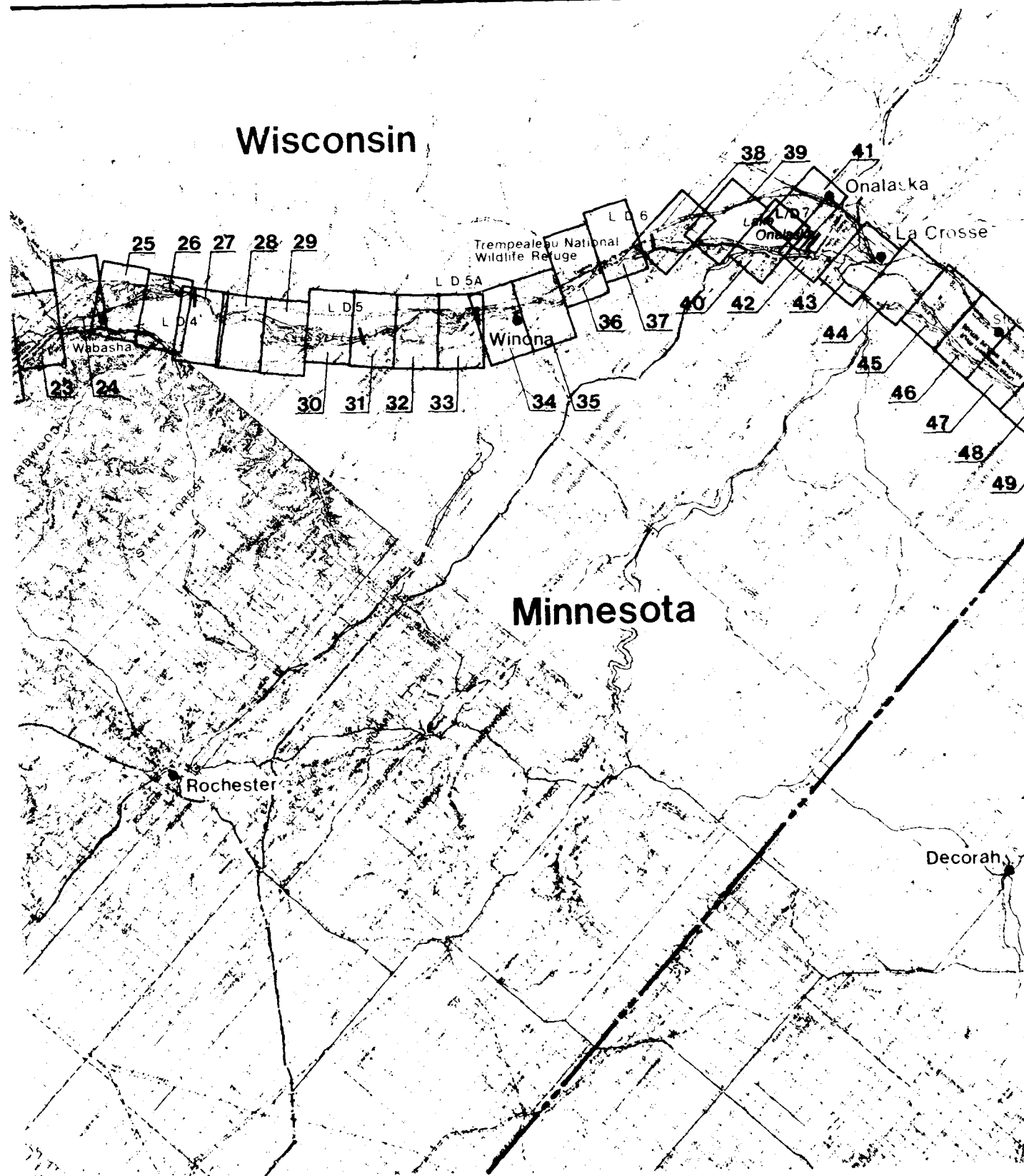
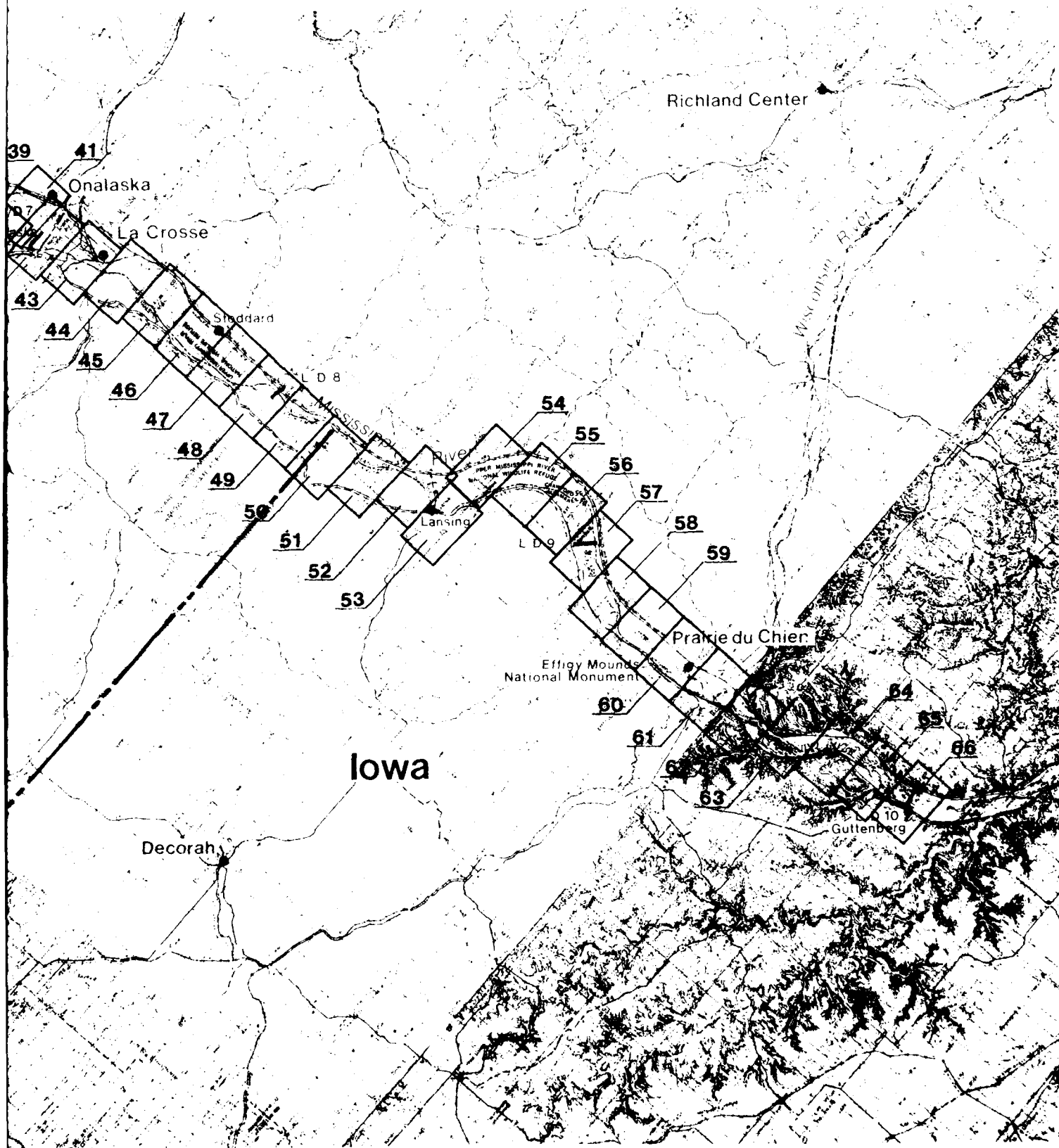


FIGURE 8-1.



8. PLAN PLATES





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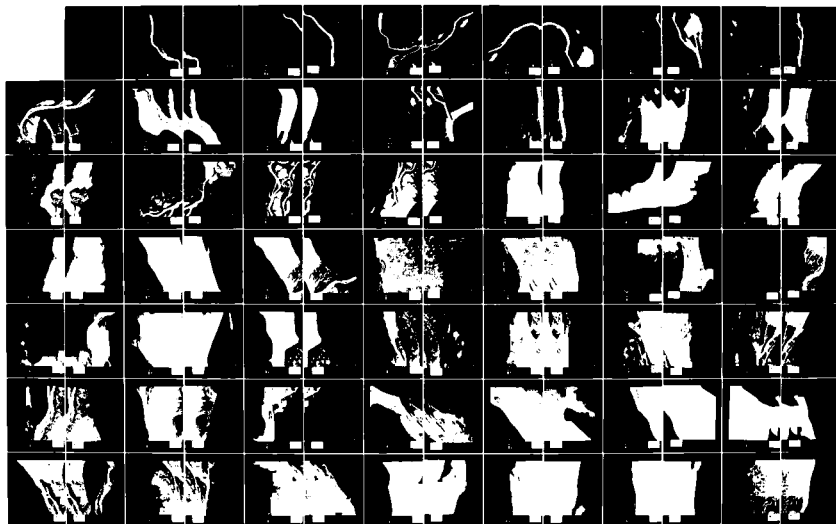
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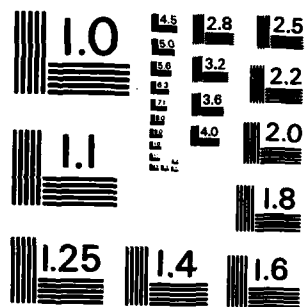
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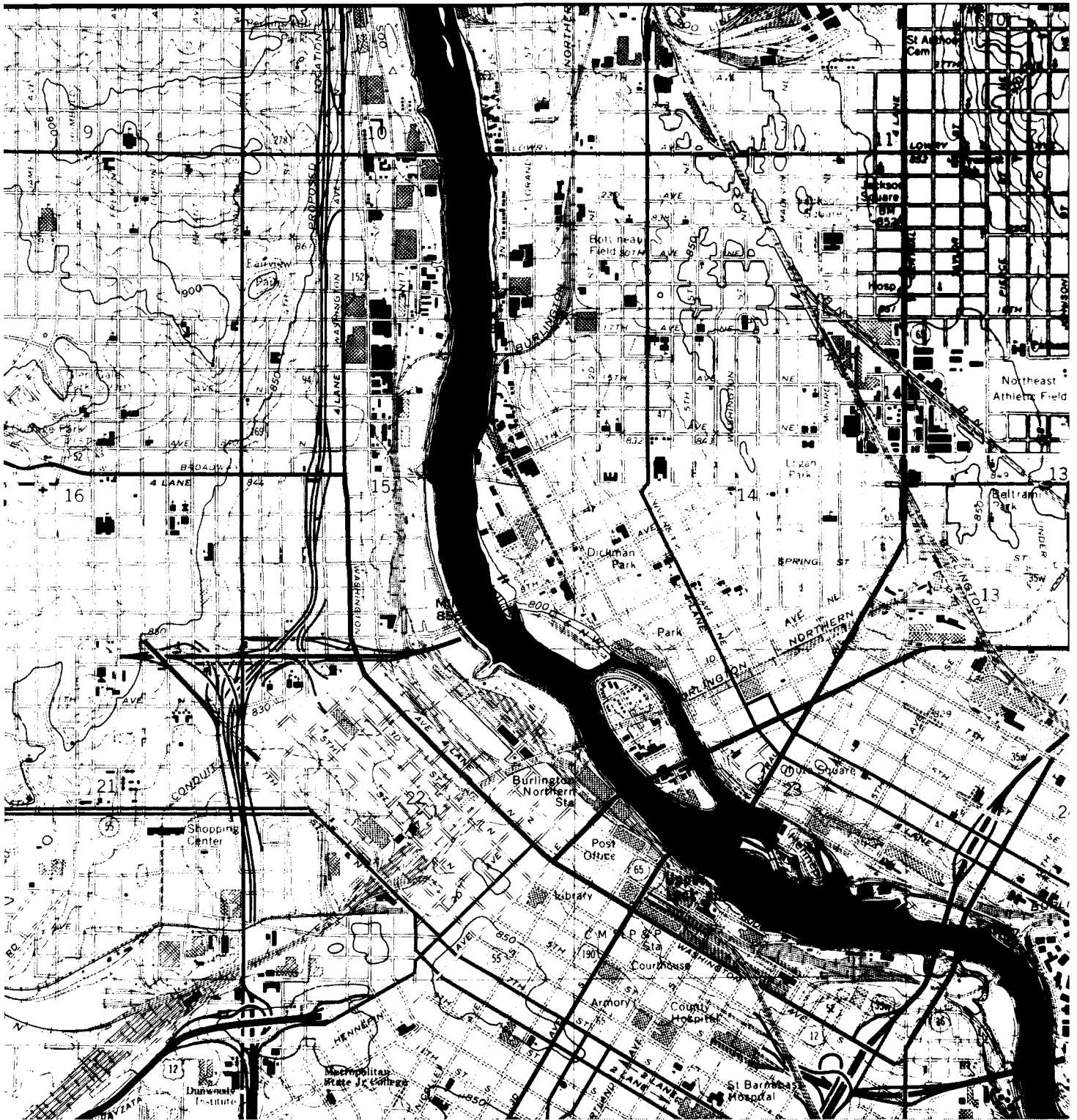
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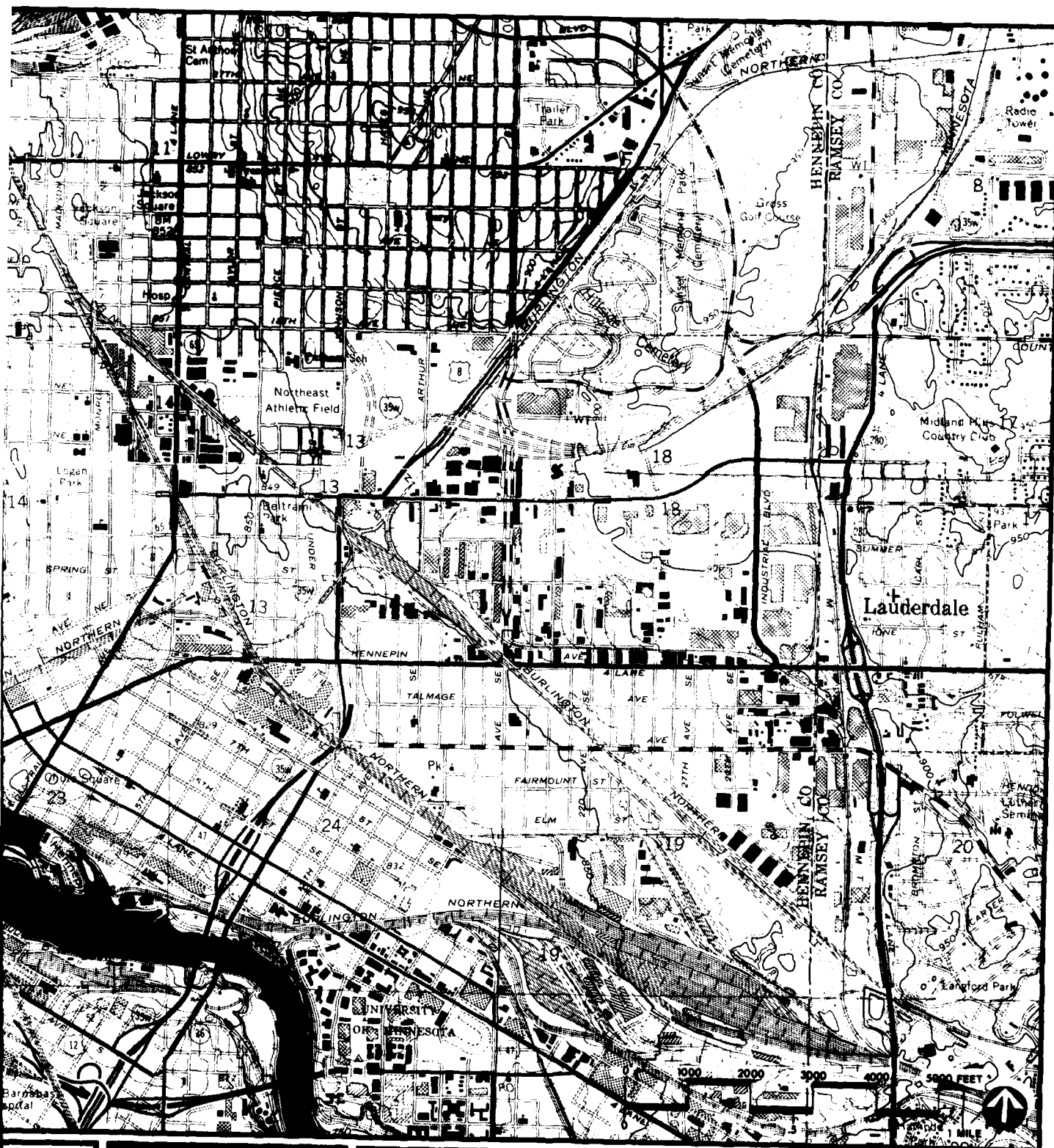
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Boundary
 Refuge Boundary
 Above Ohio River
 for definitions
 in categories



US Army Corps
 of Engineers

Drawn by: *BV/RS*

Checked by: *Russell K. Soper*

Submitted by: *Norm Hill*

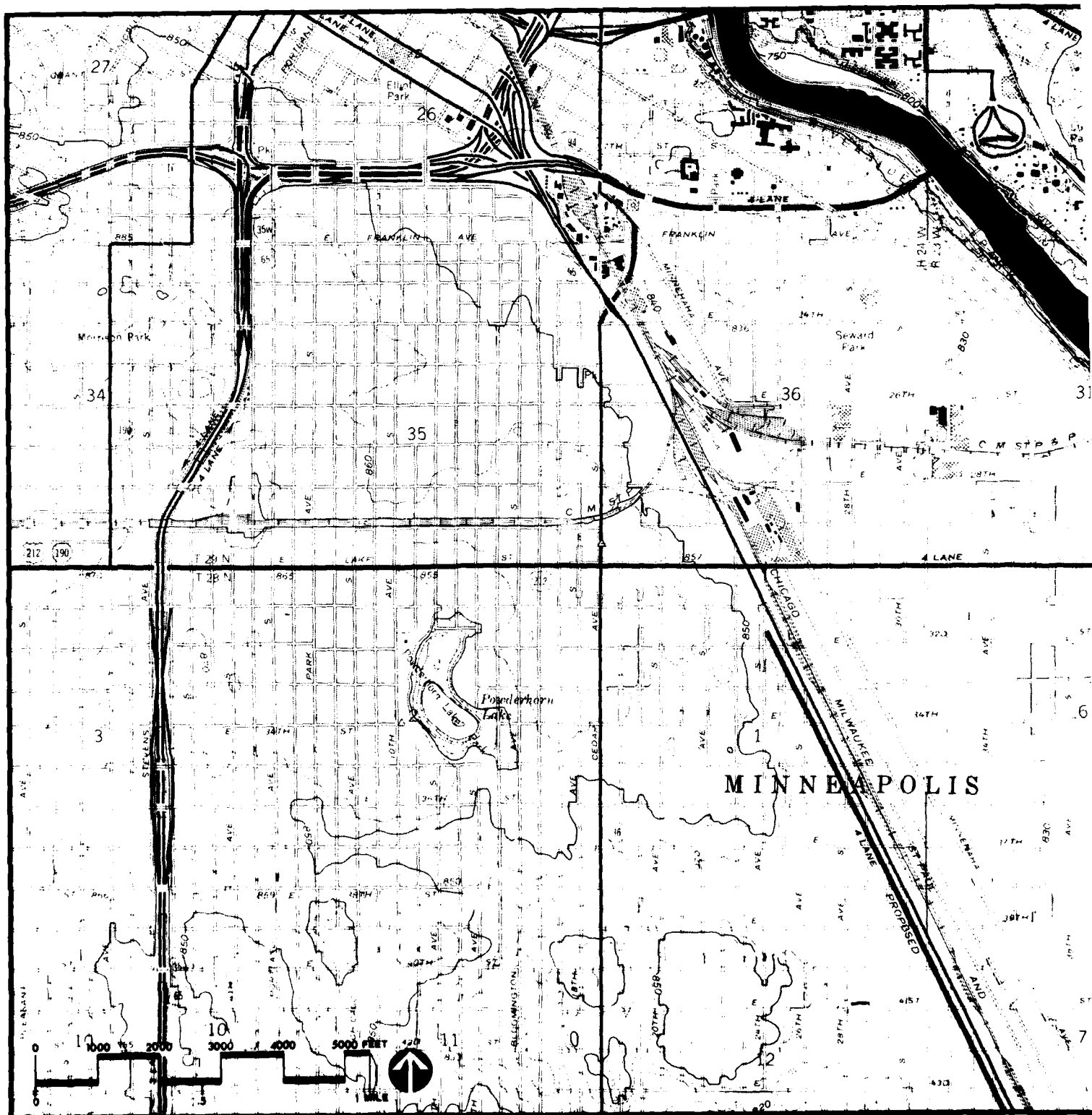
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Land Use Allocation

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Plate 1 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

State Boundary
 FWS Refuge Boundary
 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



U.S. Army Corps of Engineers



U.S. Army Corps of Engineers

Drawn by: *B.V./RS*

Checked by: *Russell K. Soper*

Submitted by: *Tom Hill*

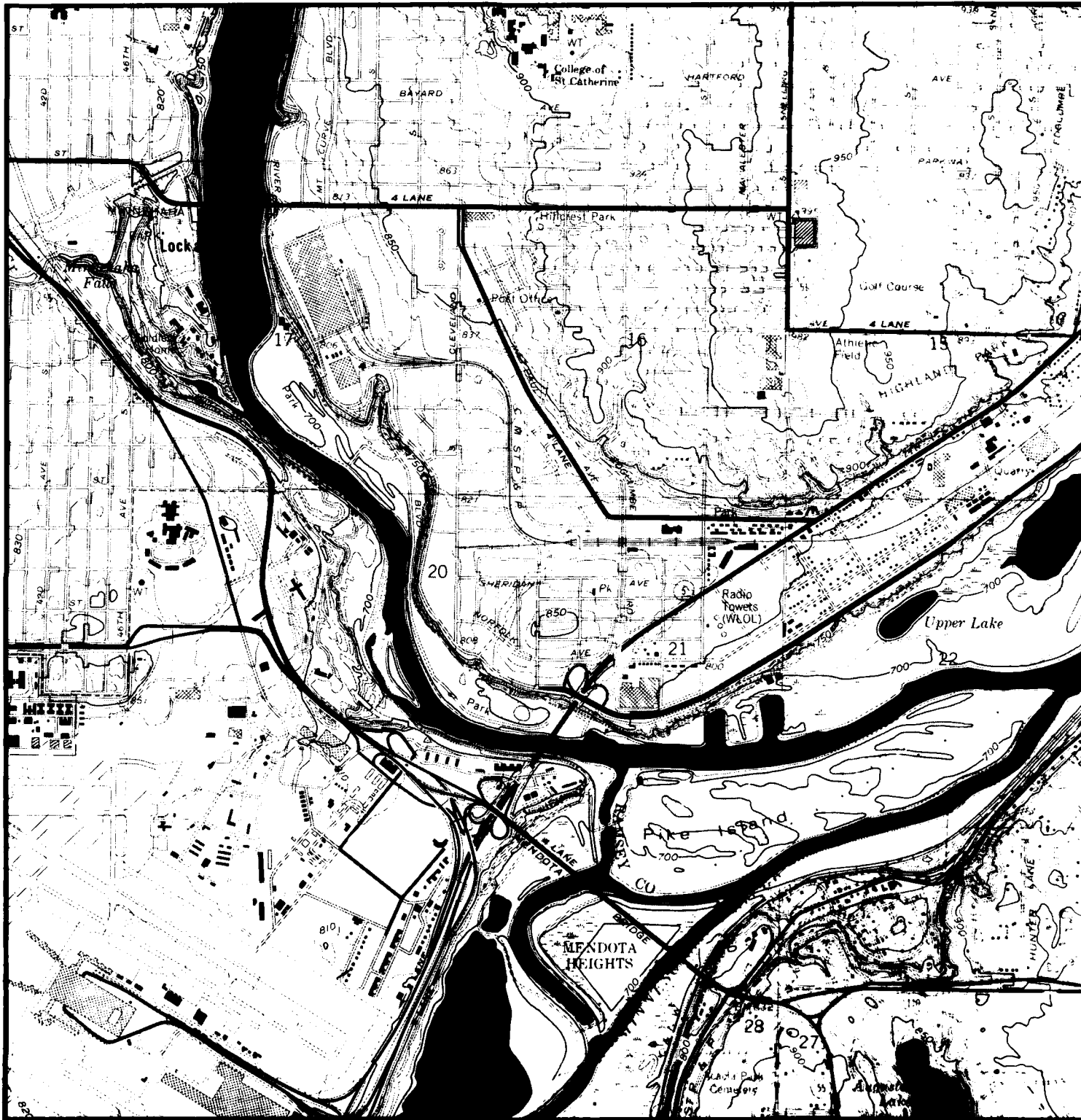
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Land Use Allocation

Pool 1

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Plate 2 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

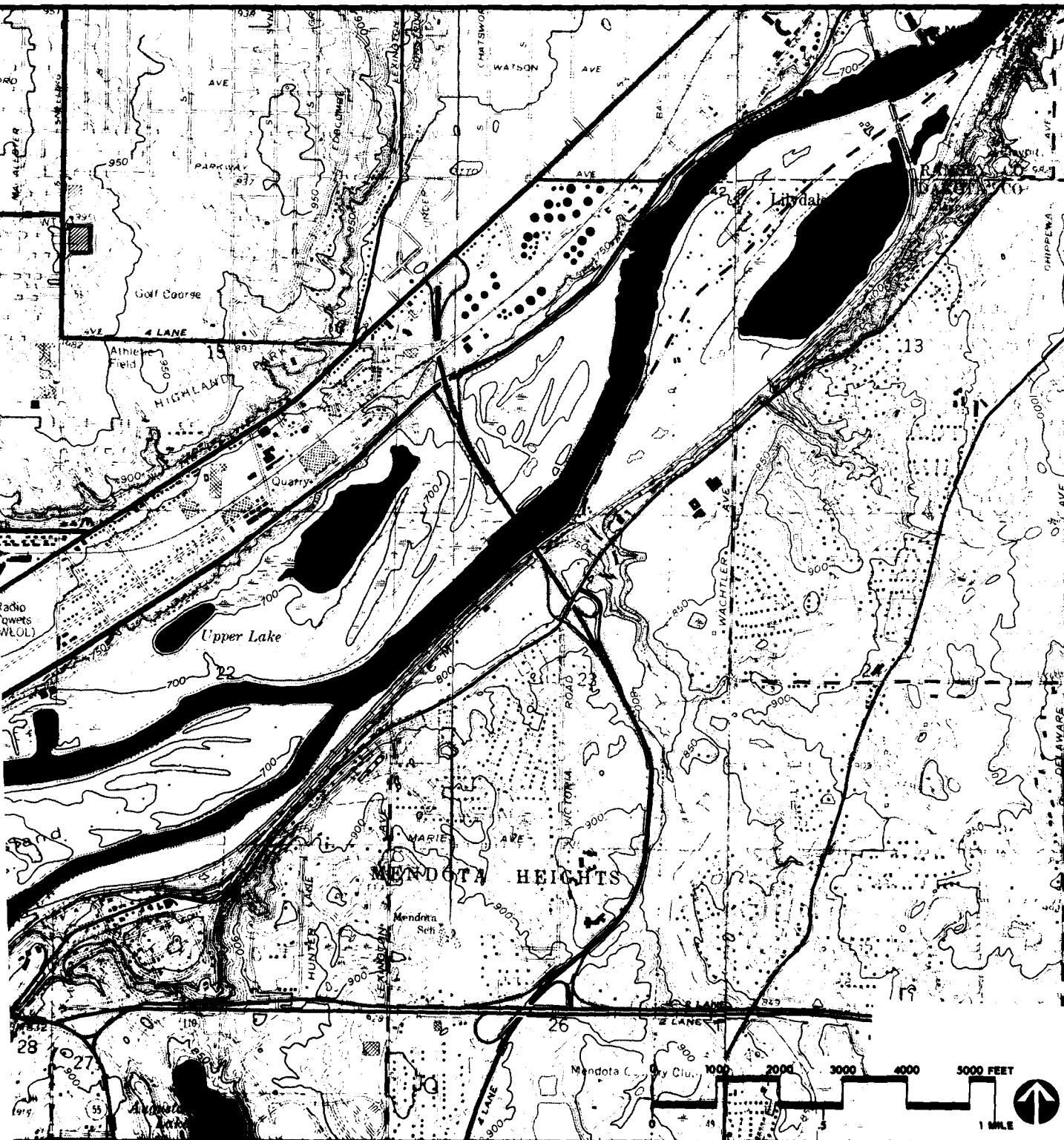
Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories





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U.S. Army Corps of Engineers

Drawn by: *BV/RS*

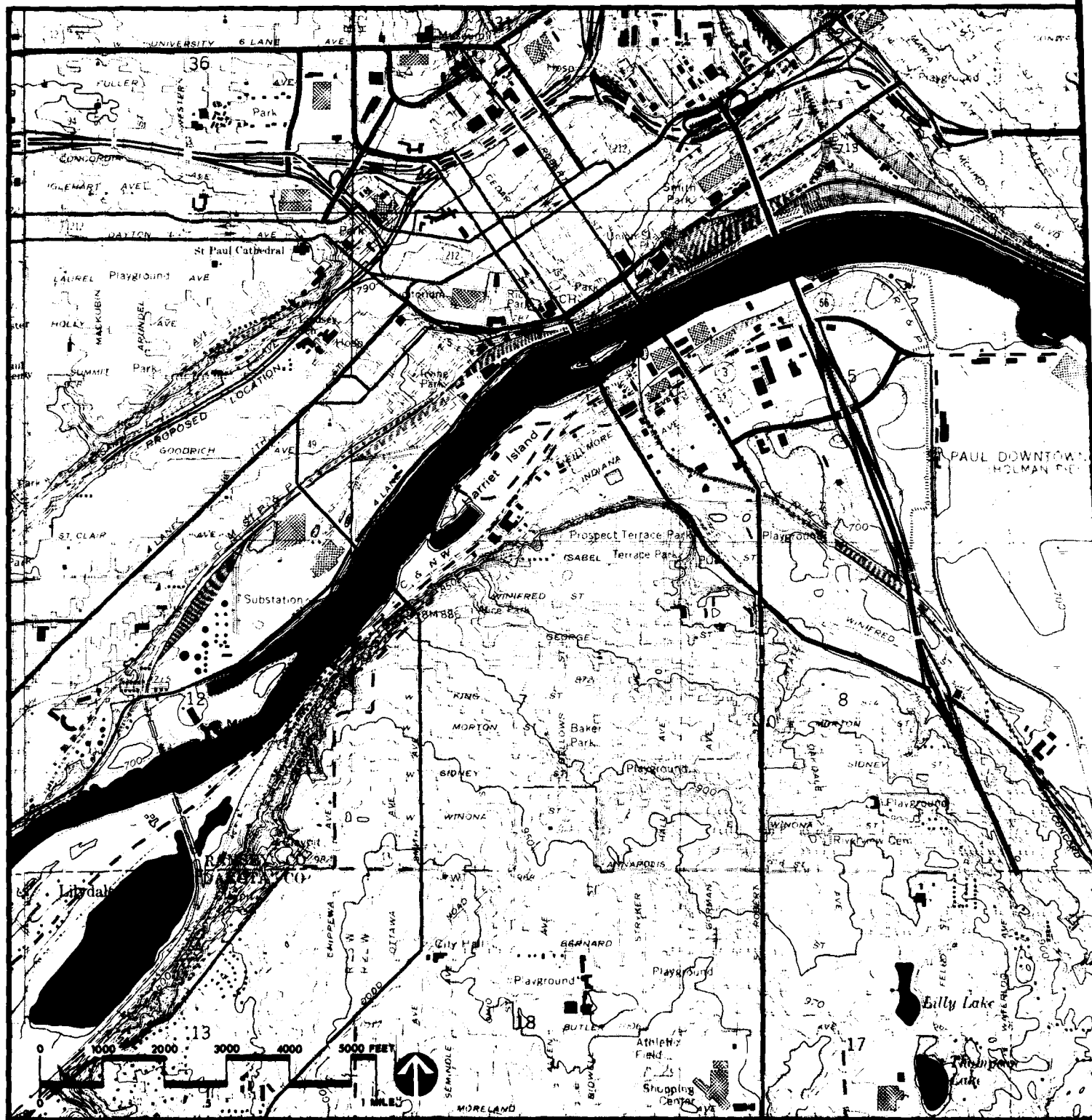
Checked by: *Russell K. Soper*

Submitted by: *Norm Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

L & D 1 Mile 841.0-848.4 Plate 3 of 66



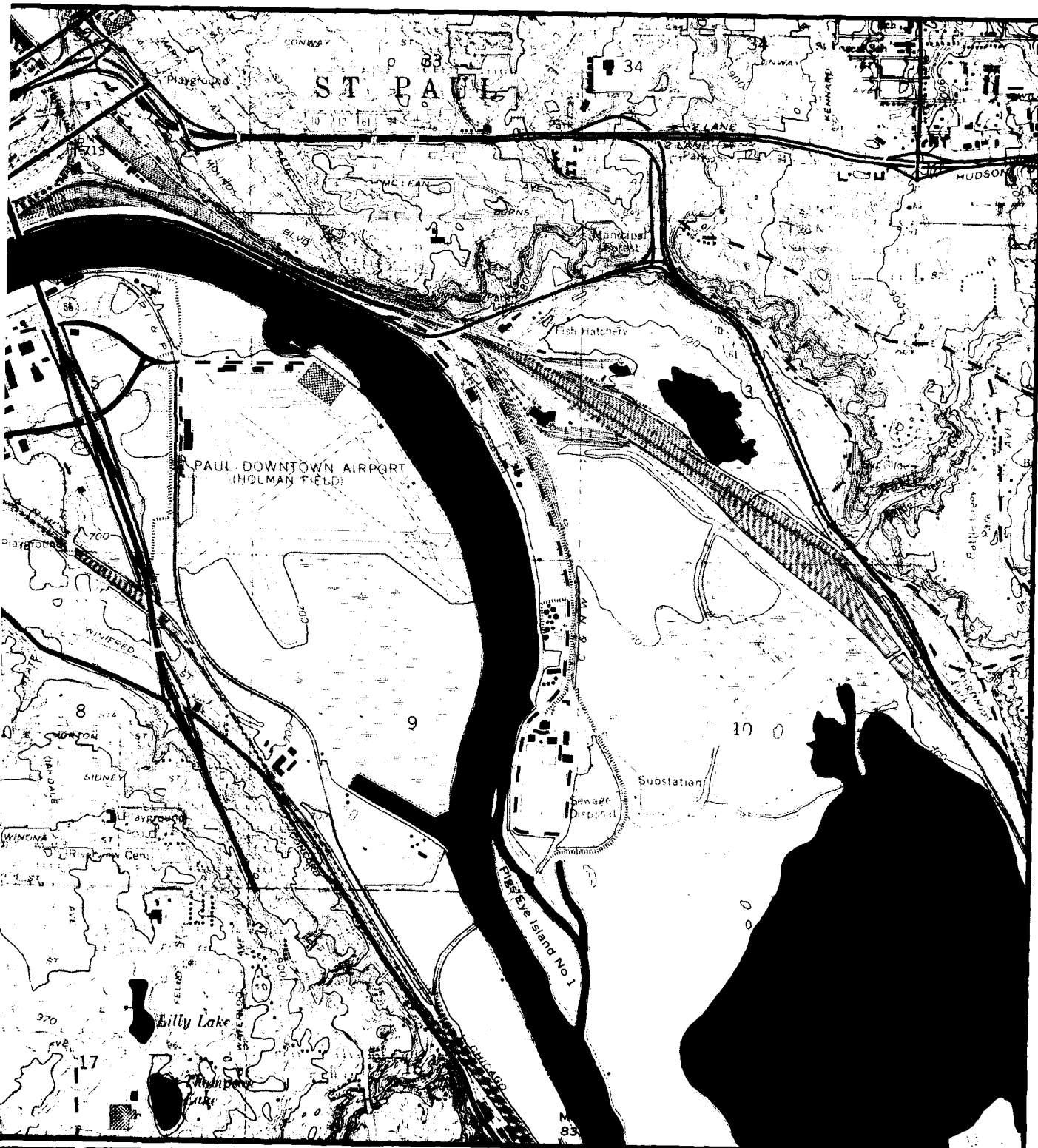
Master Plan for Public Use Development and Resource Management **Upper Mississippi River**


Legend		LAND USE ALLOCATIONS*
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

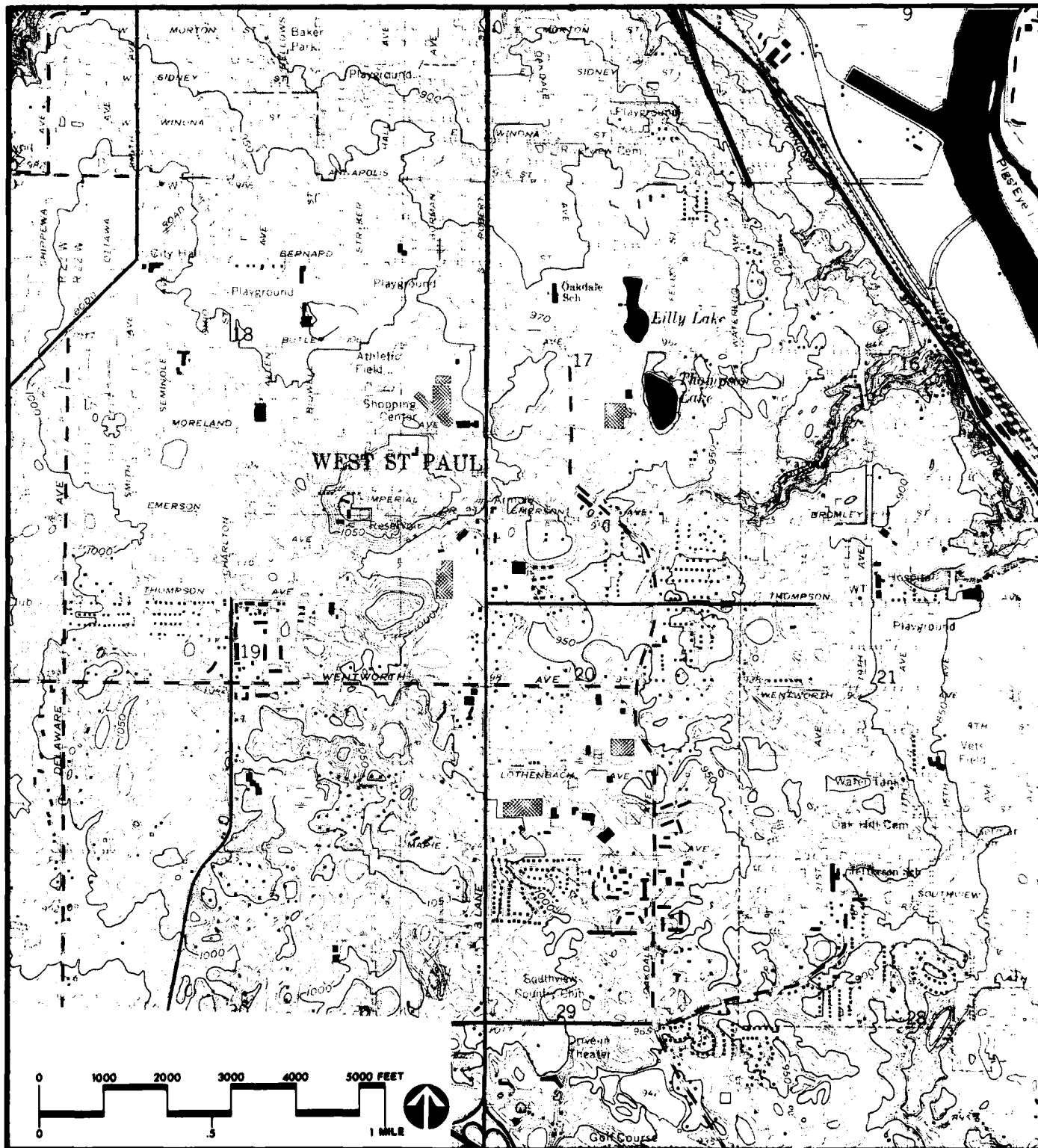
--- State Boundary
 --- FWS Refuge Boundary
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



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Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
[Symbol]	[Symbol]	Project Operations
[Symbol]	[Symbol]	Recreation / Intensive Use
[Symbol]	[Symbol]	Recreation / Low-Density
[Symbol]	[Symbol]	Natural Area
[Symbol]	[Symbol]	Wildlife Management

----- State Boundary
 ----- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



Boundary
 Refuge Boundary
 above Ohio River
 for definitions
 categories



US Army Corps of Engineers

Drawn by: BV/RS

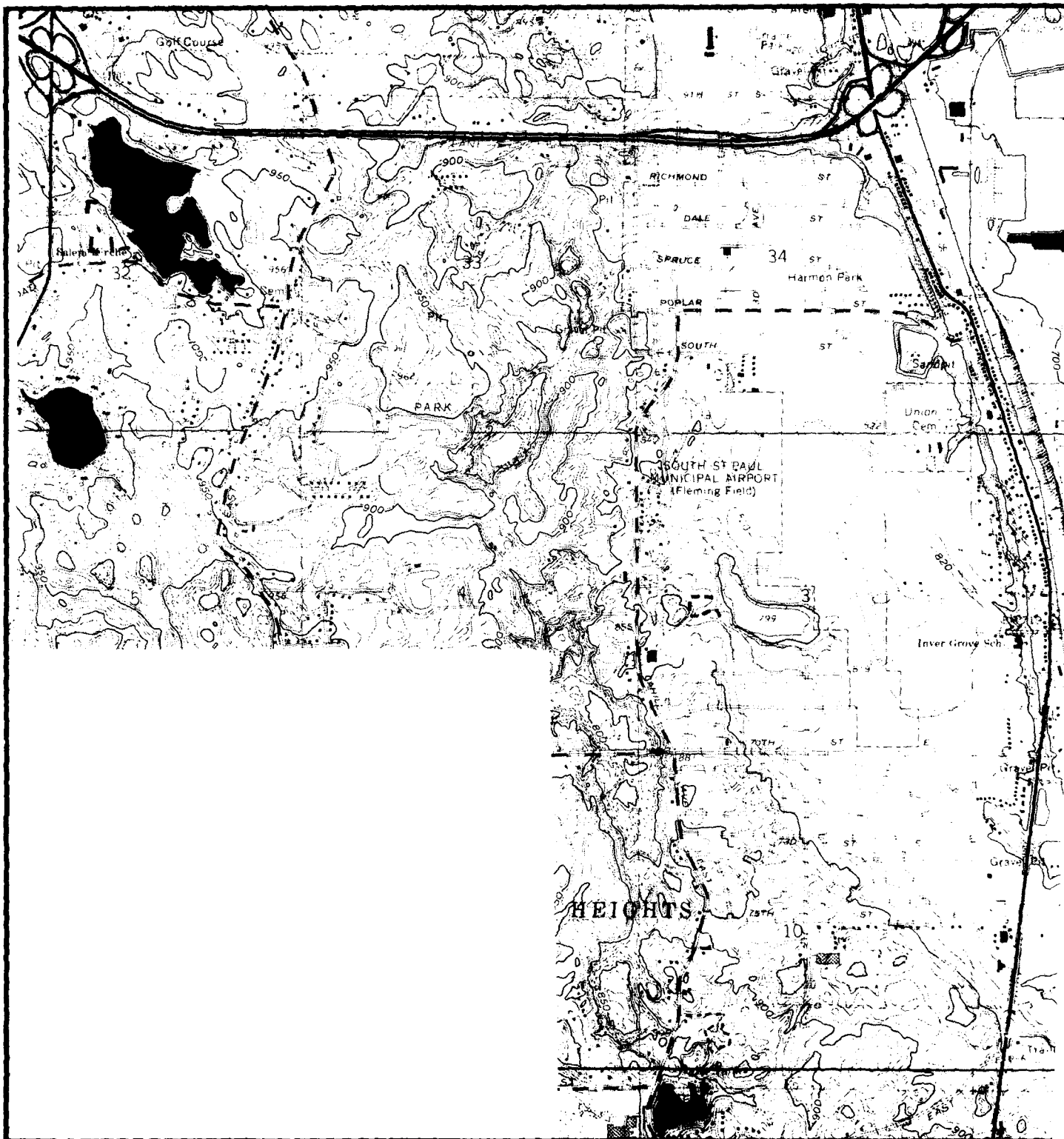
Checked by: Russell K. Seng

Submitted: [Signature]

Approved by: Charles E. Winkler

Land Use Allocation

Pool 2 Mile 832.1-836.0 Plate 5 of 66



**Master Plan for Public
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Resource Management
Upper Mississippi River**

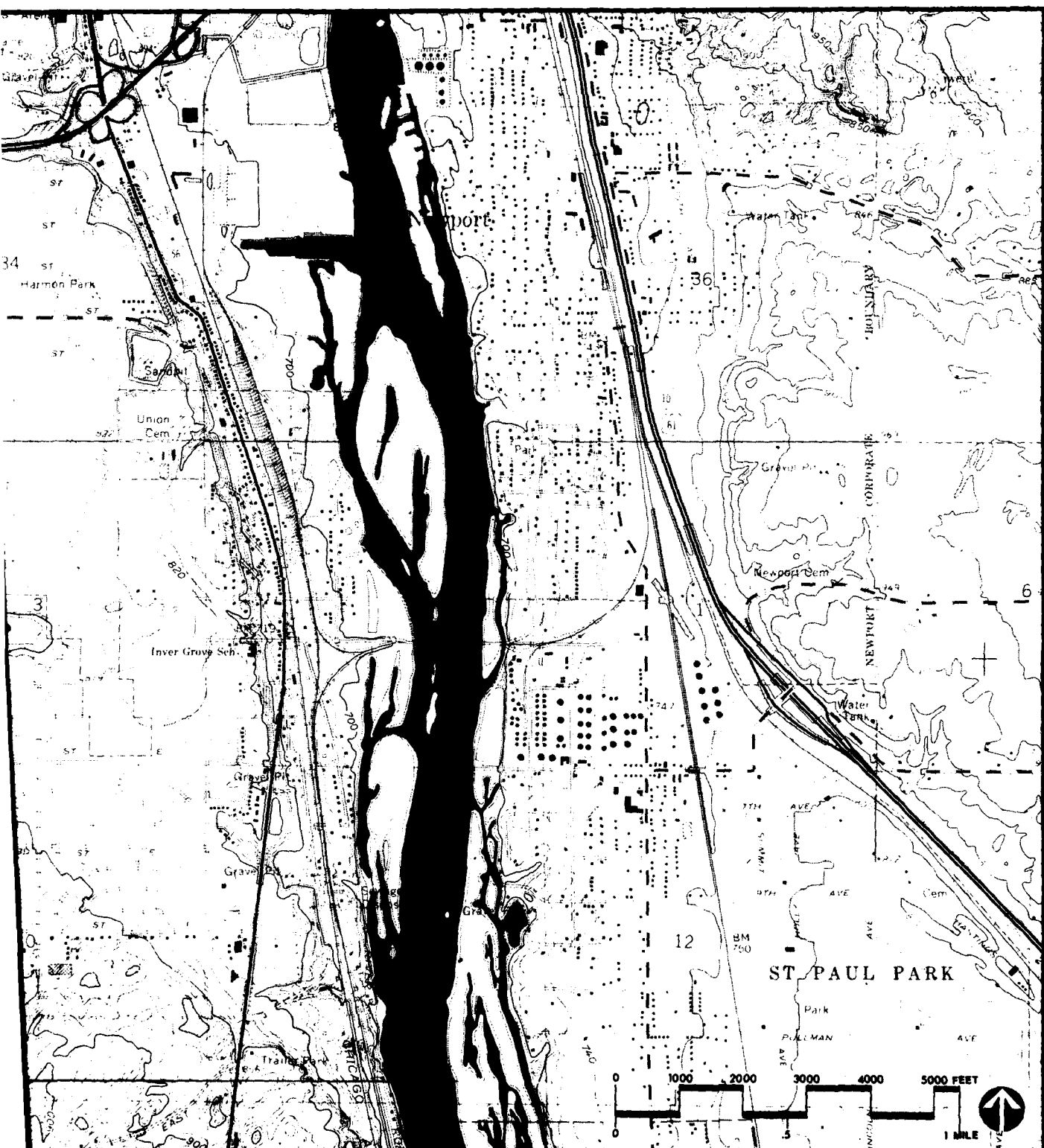
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CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Miles Above Ohio River
 * See text Section 5.0 for definitions of land use allocation categories



US Army Corps
of Engineers



US Army Corps
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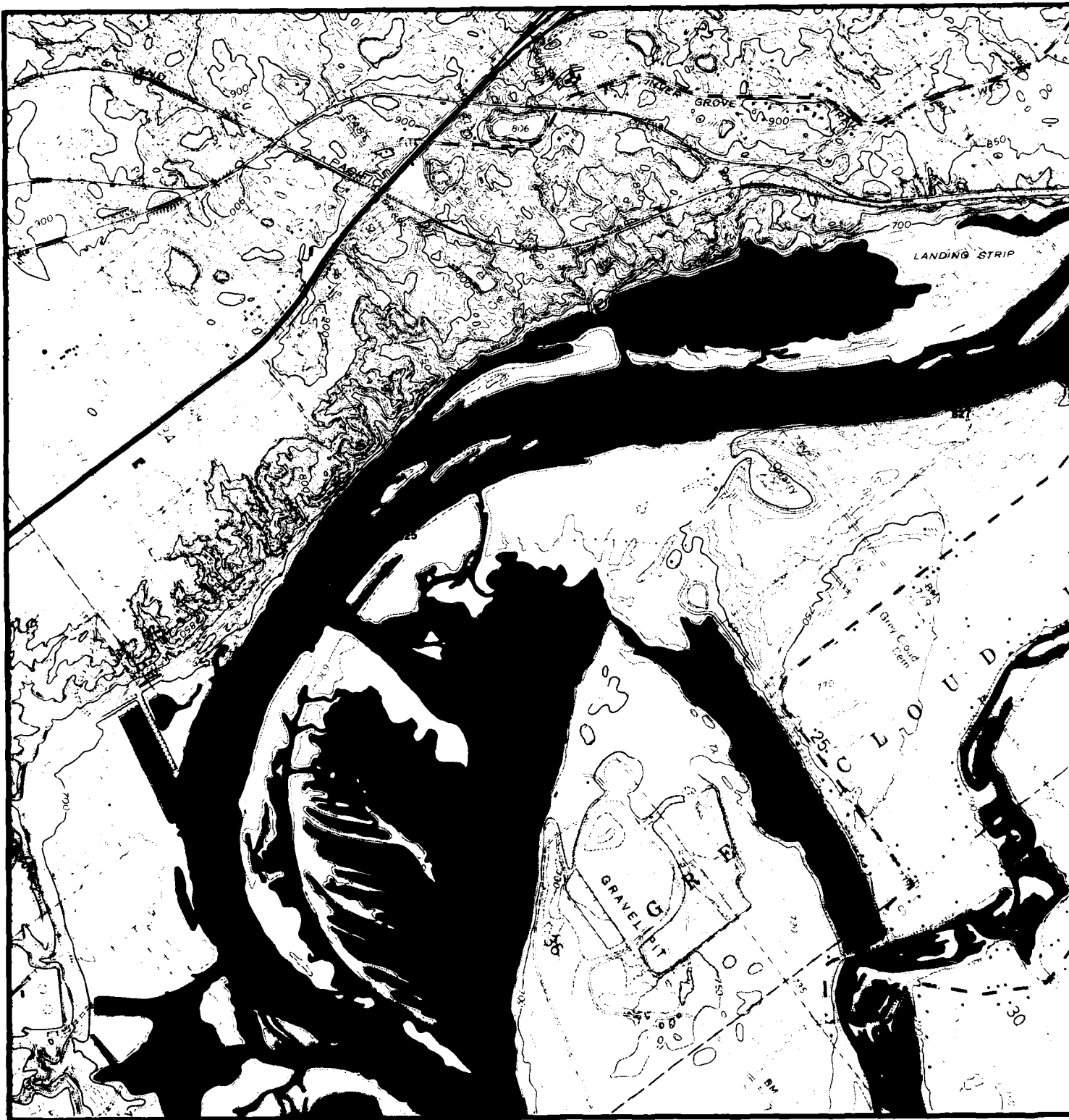
Checked by *Russell K. Sapp*

Submitted by *Wm. Hill*

Approved by *Charles E. Wagoner*

Land Use Allocation

Pool 2 Mile 828.4-832.3 Plate 6 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

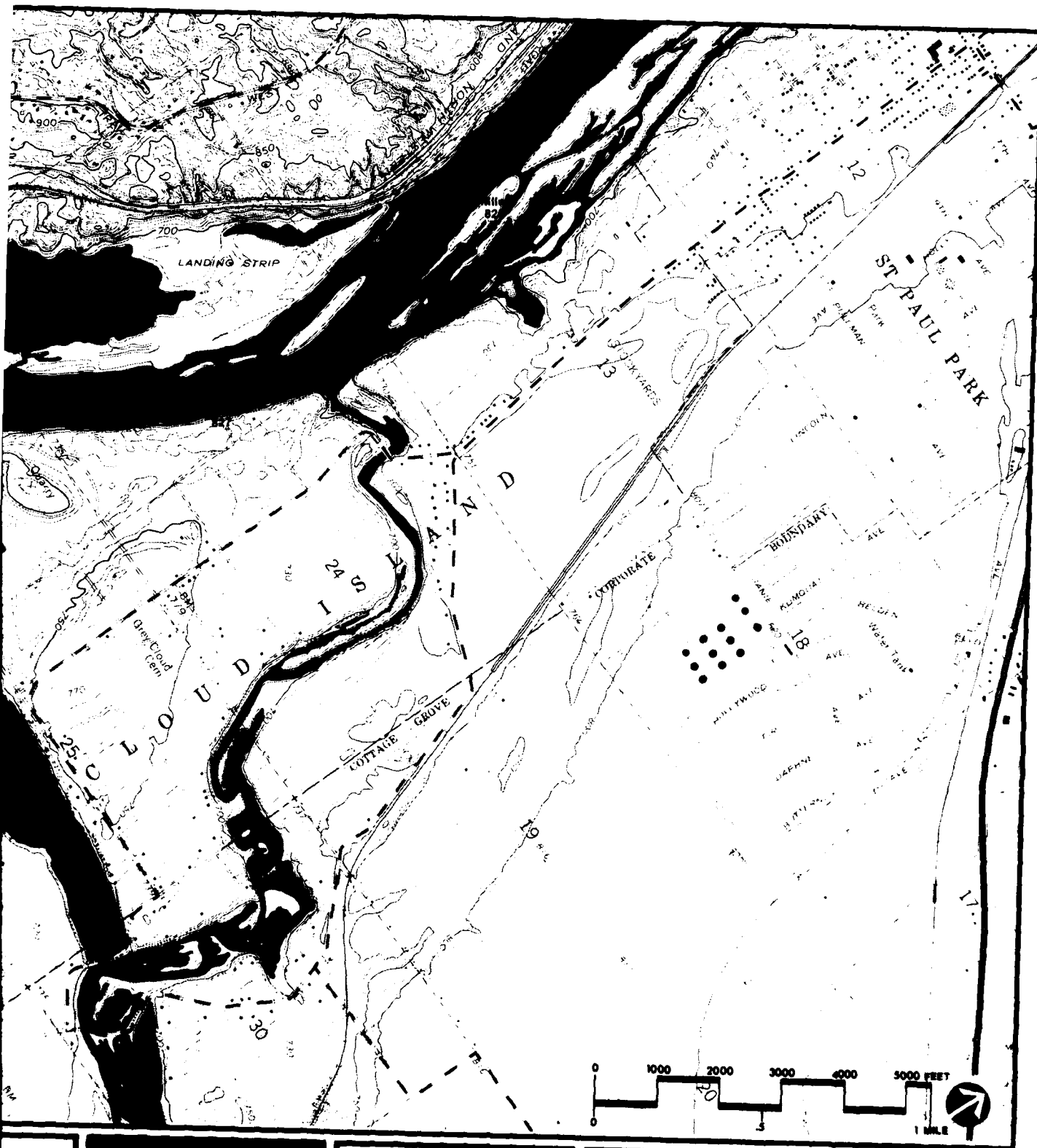
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CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

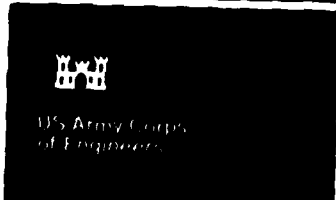
--- State Boundary
 --- FWS Refuge Boundary
 + Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



Boundary
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 definitions
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Drawn by *BV/RS*
 Checked by *Russell K. Sengler*
 Submitted by *Norm Hill*
 Approved by *Charles E. Winkler*

Land Use Allocation
 Pool 2 Mile 822.7-828.8 Plate 7 of 66

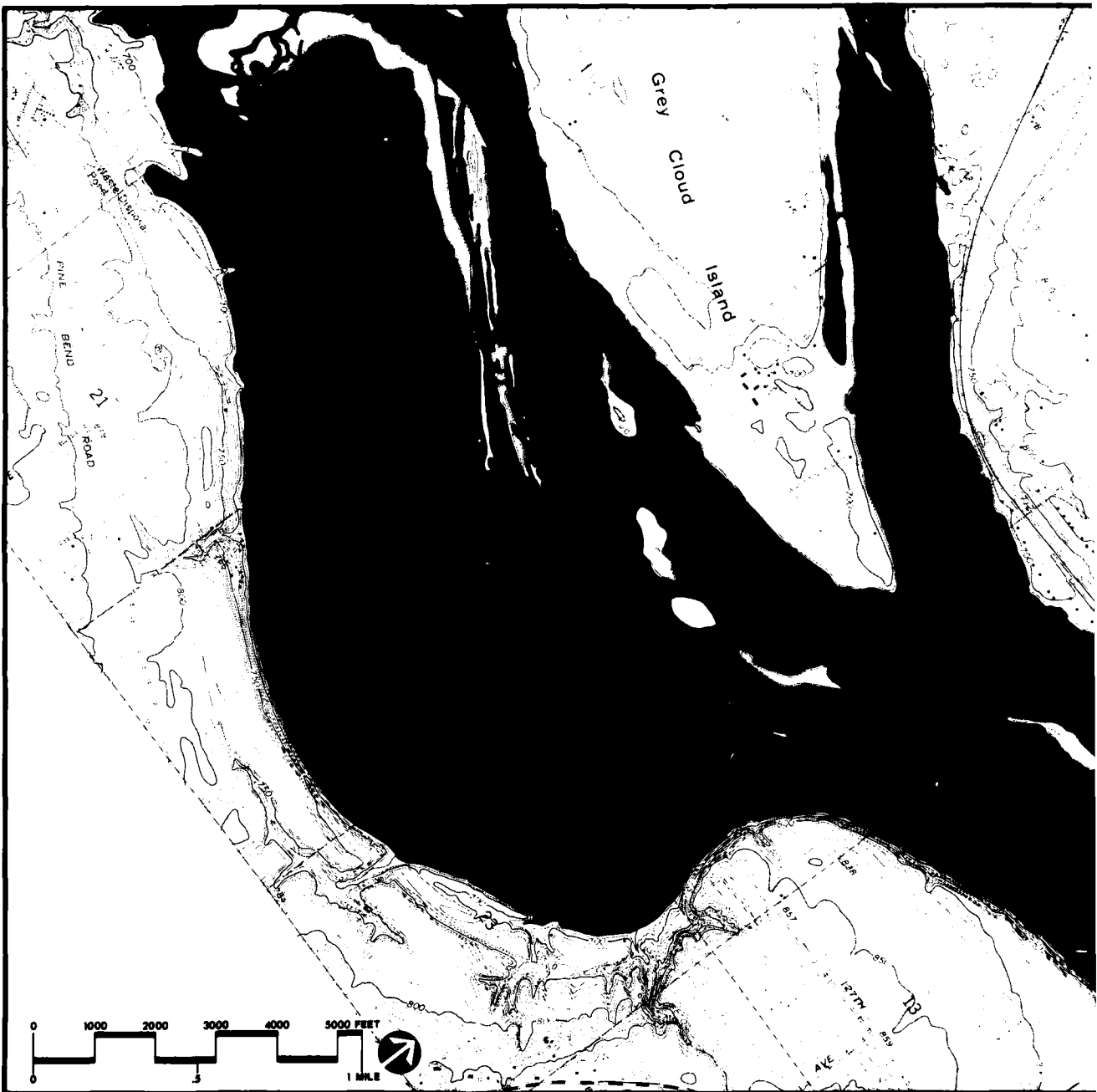
Use Development and Resource Management Upper Mississippi River

	Project Operations
	Recreation / Intensive Use
	Recreation / Low-Density
	Natural Area
	Wildlife Management

	State Boundary
	FWS Refuge Boundary
	Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories

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Corps of Engineers



Master Plan for Public Use Development and Resource Management Upper Mississippi River

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

	State Boundary
	FWS Refuge Boundary
	Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps of Engineers

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US Army Corps
 of Engineers

Drawn by: *EV/RS*

Checked by: *Russell K. Snyder*

Submitted by: *Wm. Hill*

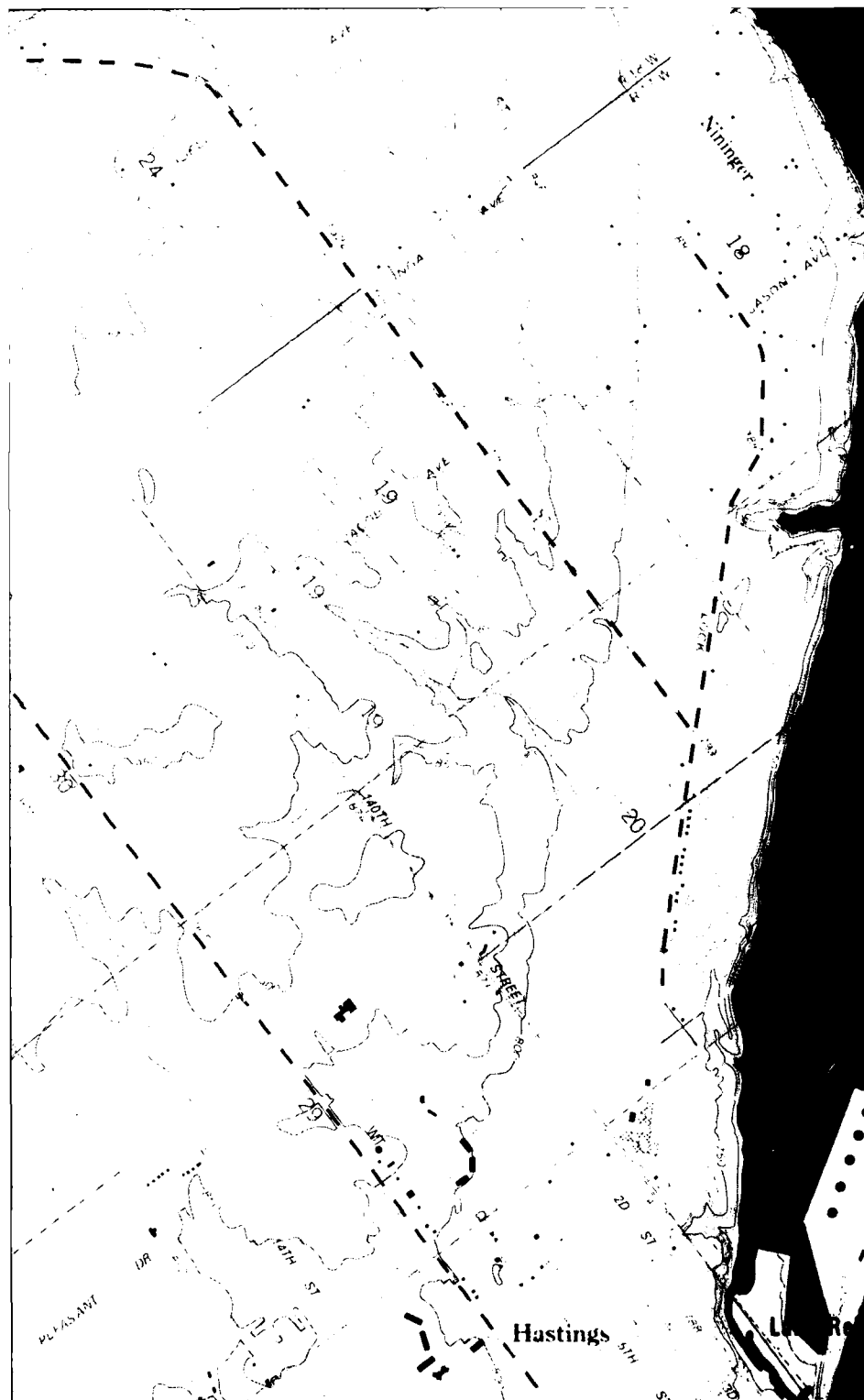
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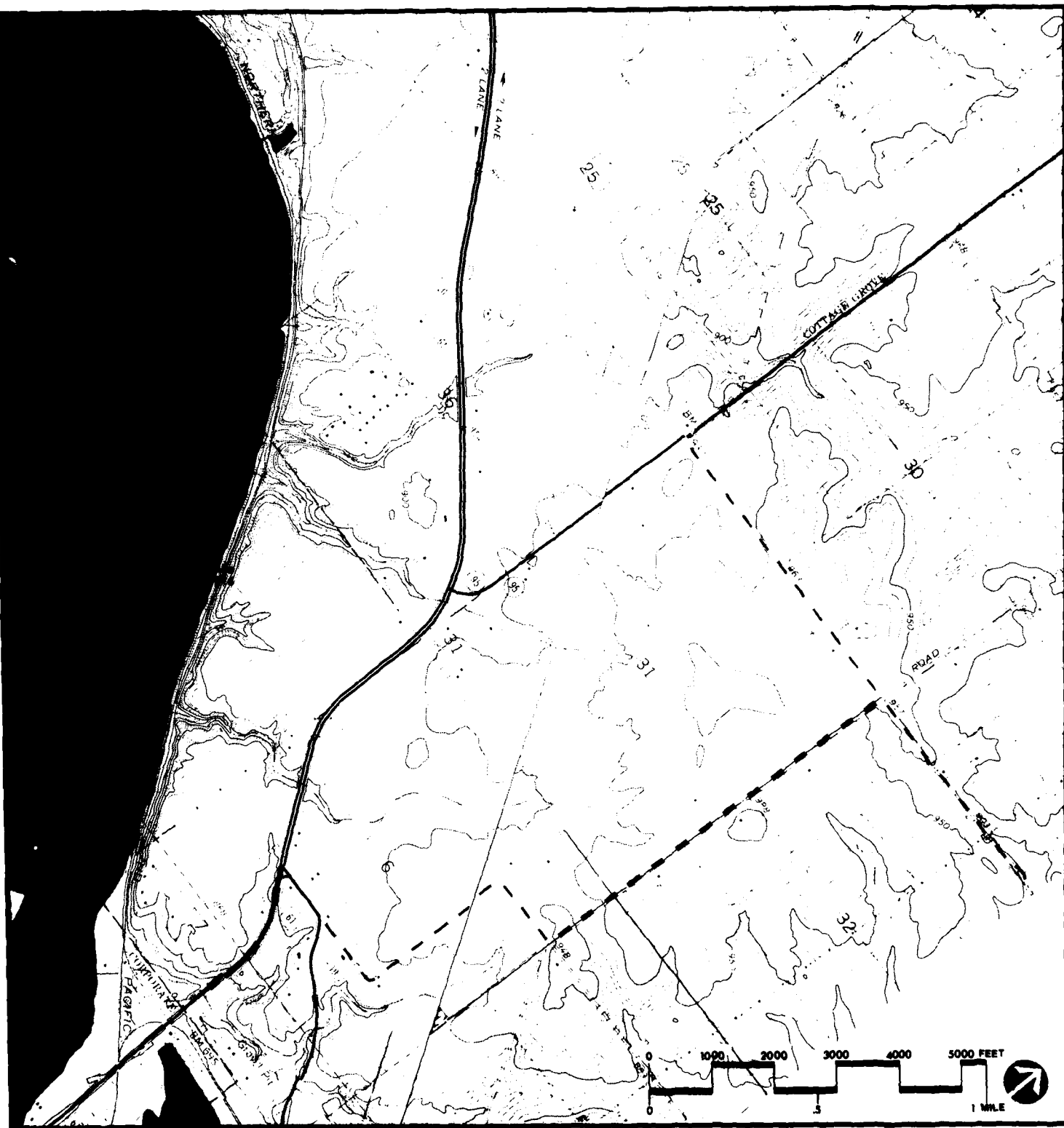
Land Use Allocation

Pool 2

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Plate 8 of 88



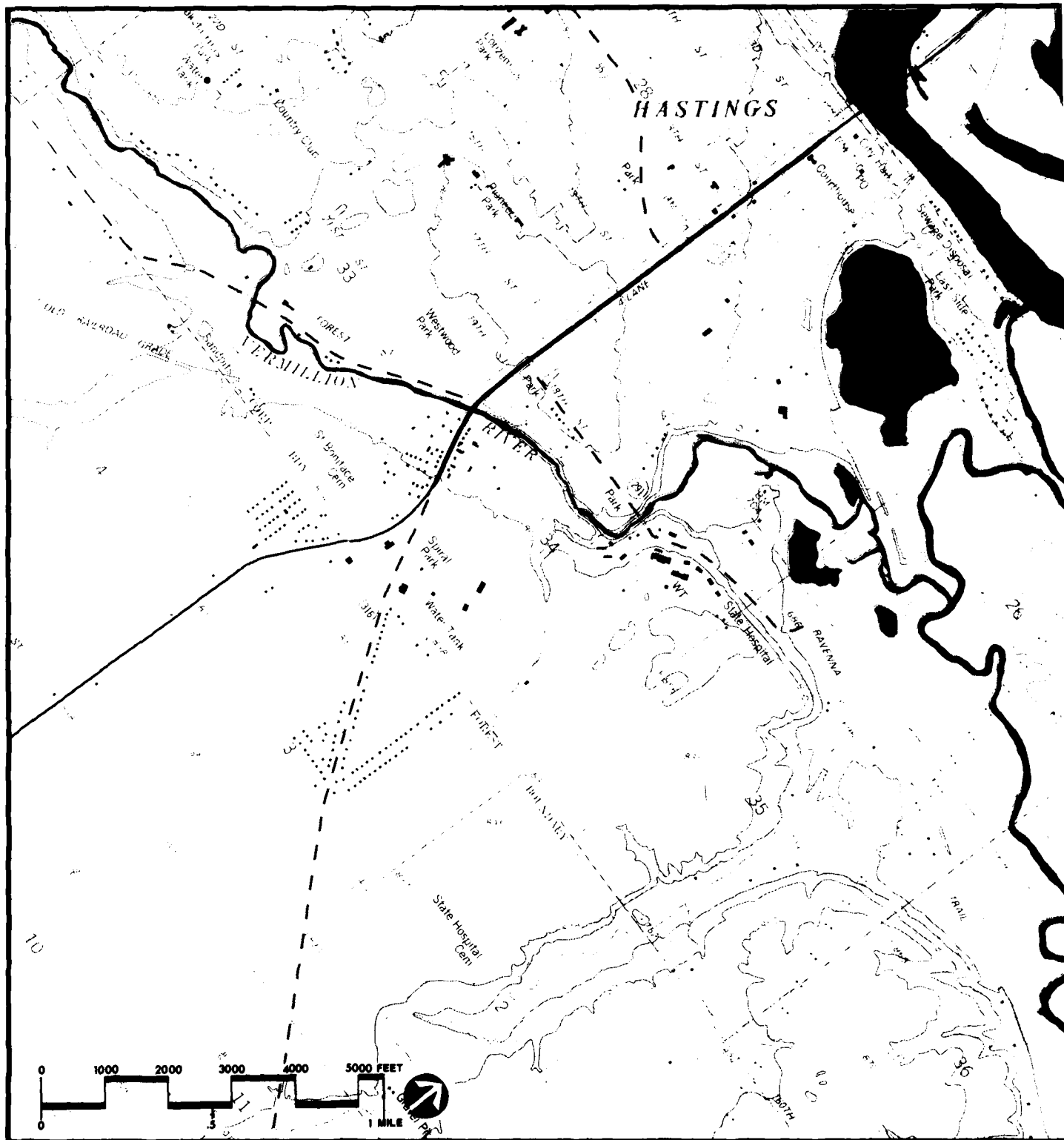


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Drawn by: BV/RS
 Checked by: *Russell K. Snyder*
 Submitted by: *Norm Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation
 L & D 2 Mile 814.0-818.2 Plate 9 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
[Shaded Box]	[Shaded Box]	Project Operations
[Shaded Box]	[Shaded Box]	Recreation / Intensive Use
[Shaded Box]	[Shaded Box]	Recreation / Low-Density
[Shaded Box]	[Shaded Box]	Natural Area
[Shaded Box]	[Shaded Box]	Wildlife Management

State Boundary
FWS Refuge Boundary
+ 728 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



Drawn by *BV/RS*

Checked by *Russell K. Sogler*

Submitted by *Wm. Hill*

Approved by *Charles E. Wagoner*

Land Use Allocation

Pool 3 Mile 810.2-814.2 Plate 10 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River



US Army Corps
of Engineers



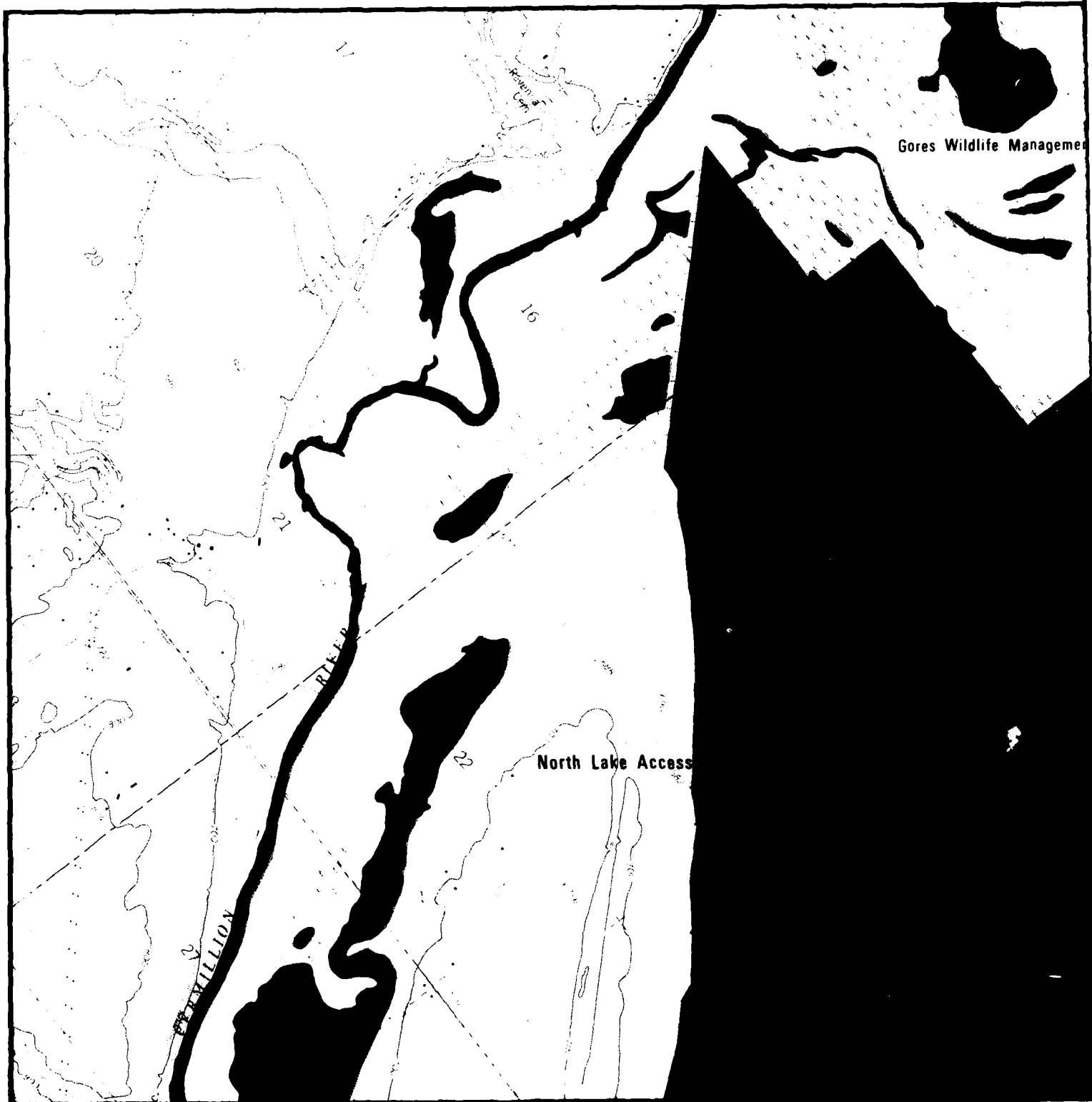
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Drawn by: BV/RS.
Checked by: *Russell K. Sengler*
Submitted by: *Norm Hill*
Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 3 Mile 806.8-810.4 Plate 11 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend		LAND USE ALLOCATIONS *
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation - Intensive Use
		Recreation - Low Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 0 25 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers

Gores Wildlife Management Area

14967

30. Eagle Point

BURLINGTON

NORTHERN

33

State Landmark

T. 36.1 N
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0 1000 2000 3000 4000 5000 FEET



U.S. Army Corps of Engineers

Drawn by: BV/RS

Checked by: Russell K. Sengler

Submitted by: *[Signature]*

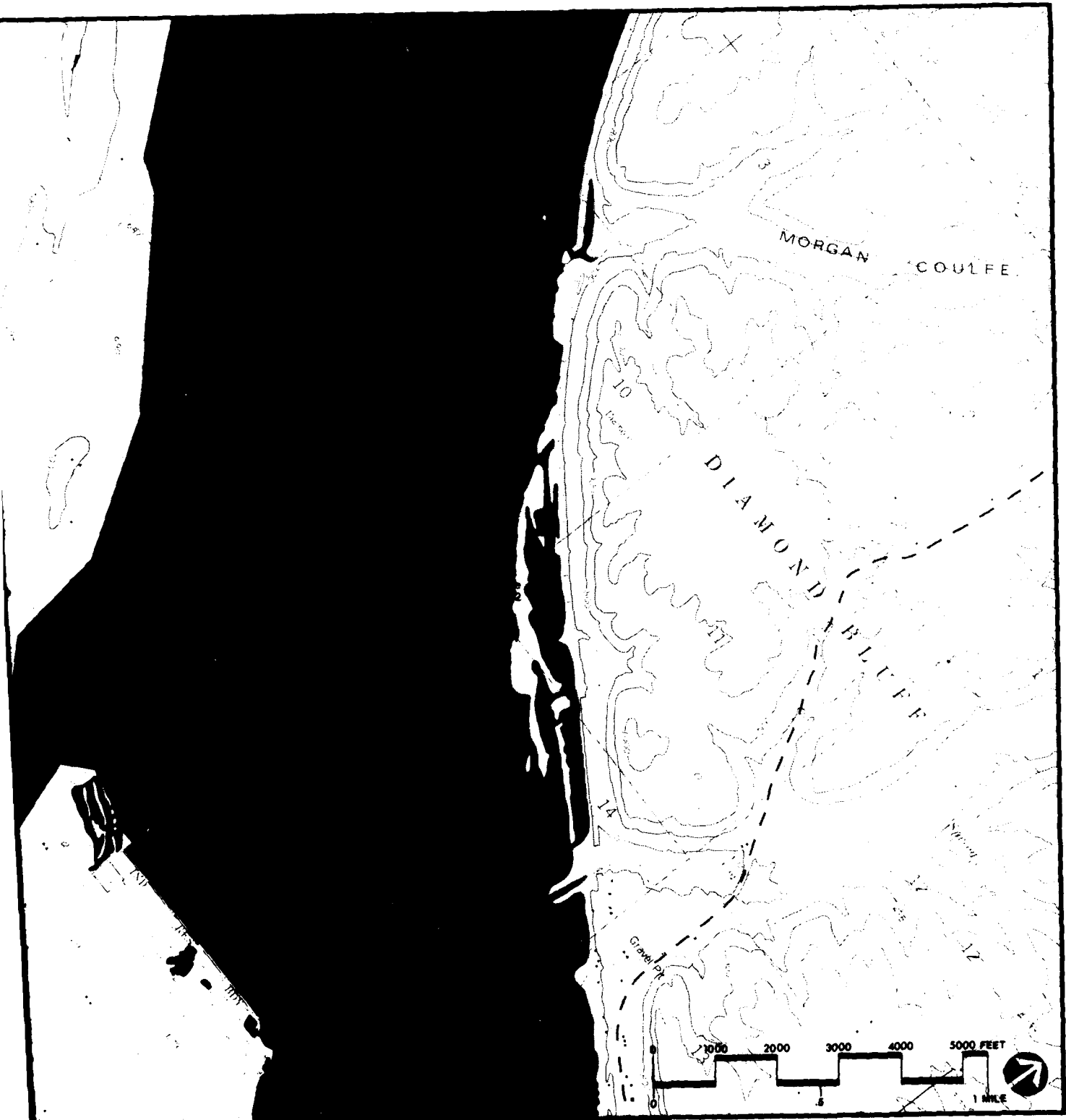
Approved by: Charles E. Winkler

Land Use Allocation

Pool 3 Mile 803.6-807.0 Plate 12 of 66

boundary
refuge Boundary
above Ohio River
for definitions
categories





Boundary
 Refuge Boundary
 Above Ohio River
 0 for definitions
 on categories



US Army Corps
 of Engineers

Drawn by: *BV/RS*

Checked by: *Russell K. Sogge*

Submitted by: *Wm. Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 3 Mile 800.2-803.8 Plate 13 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

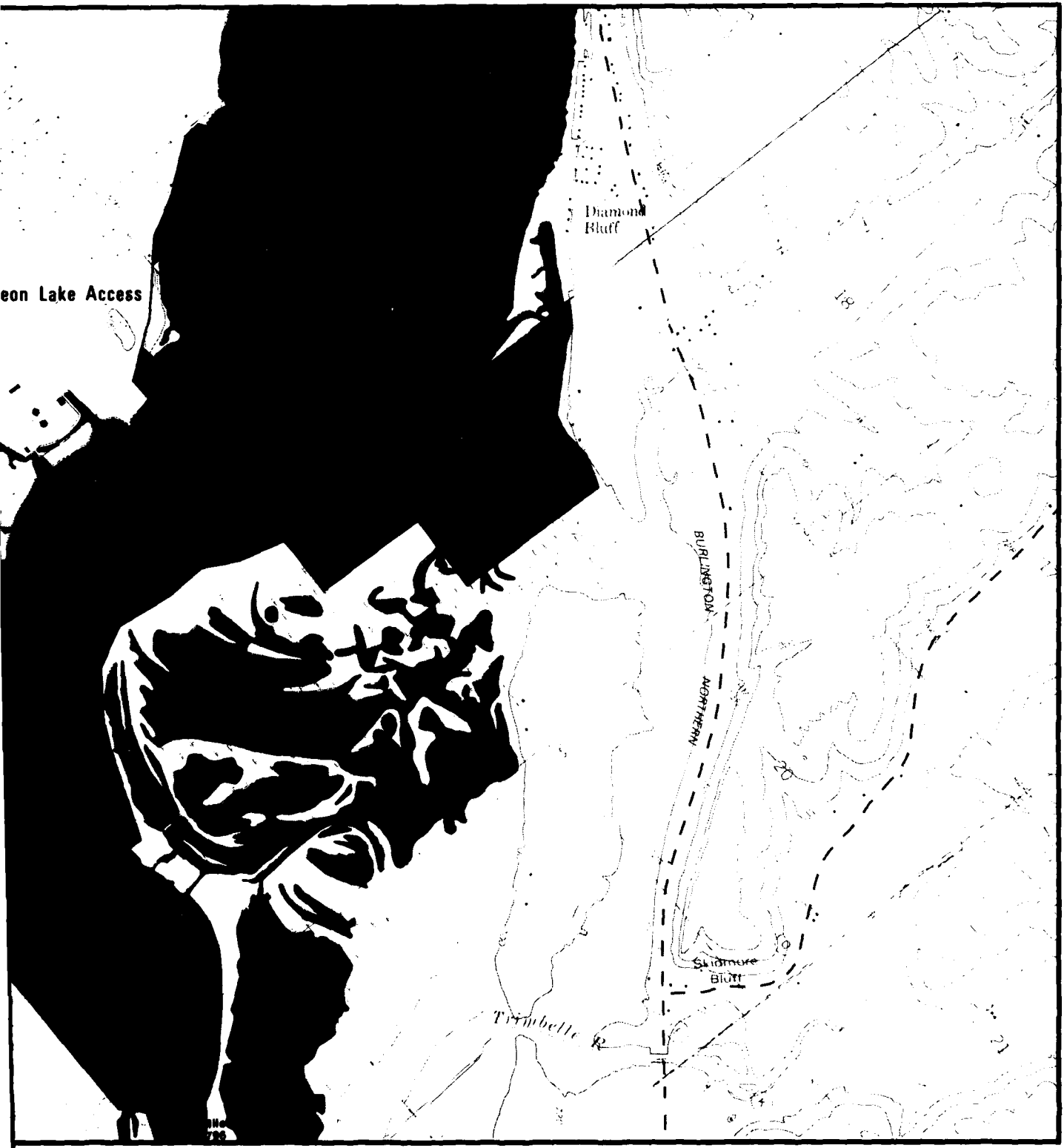
Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation - Intensive Use
		Recreation - Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 * Mile 725 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



boundary
 Refuge Boundary
 above Ohio River
 for definitions
 in categories

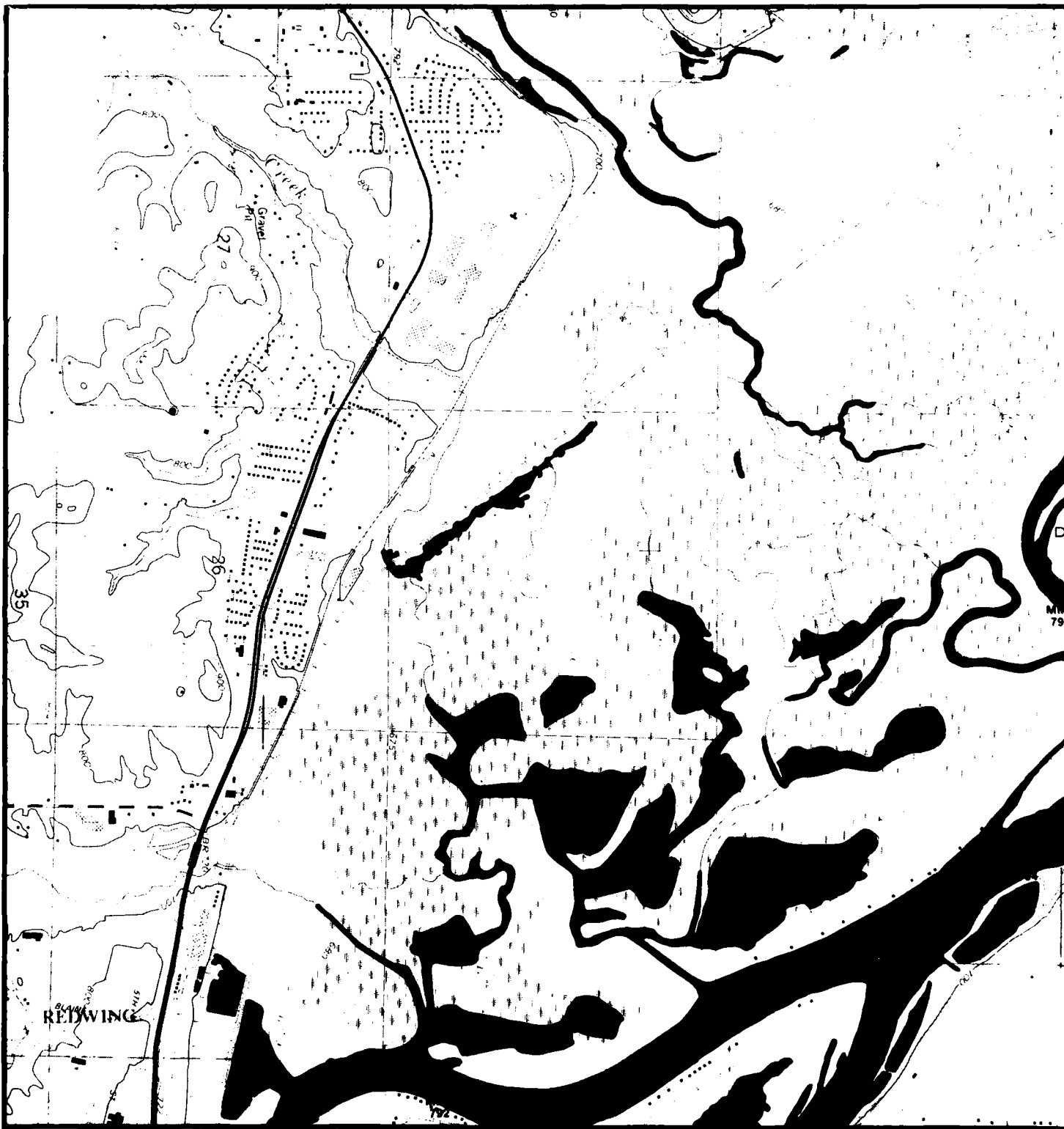


US Army Corps
 of Engineers

Drawn by: *BV/RS*
 Checked by: *Russell K. Snyder*
 Submitted by: *Norm Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation

L & D 3 Mile 796.0-800.5 Plate 14 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Miles Above Ohio River
 + Miles 725

* See text Section 50 for definitions
 of land use allocation categories



US Army Corps
 of Engineers



Boundary
Refuge Boundary
Above Ohio River
D for definitions
in categories


US Army Corps
of Engineers

Drawn by: *BV/RS*

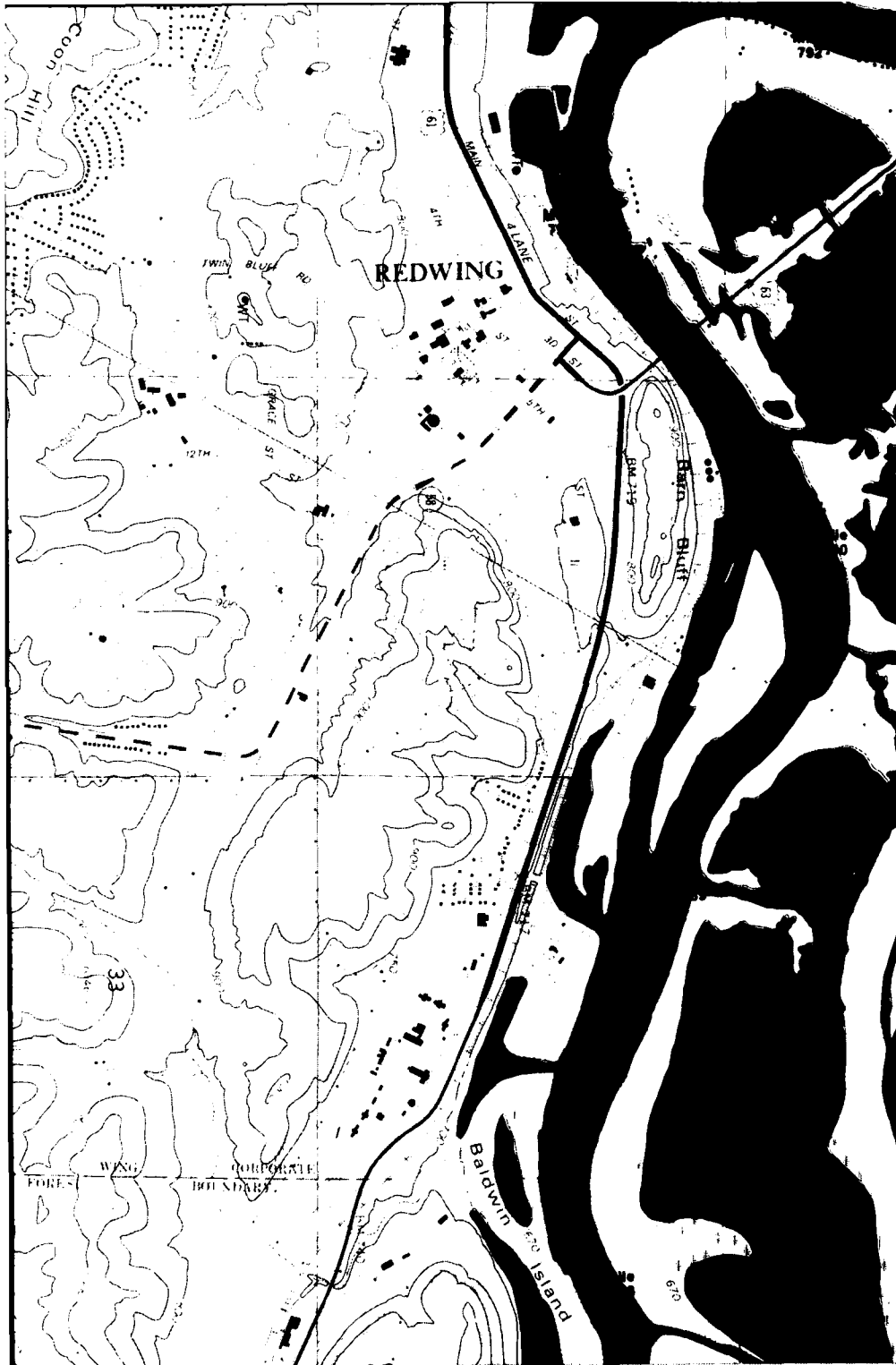
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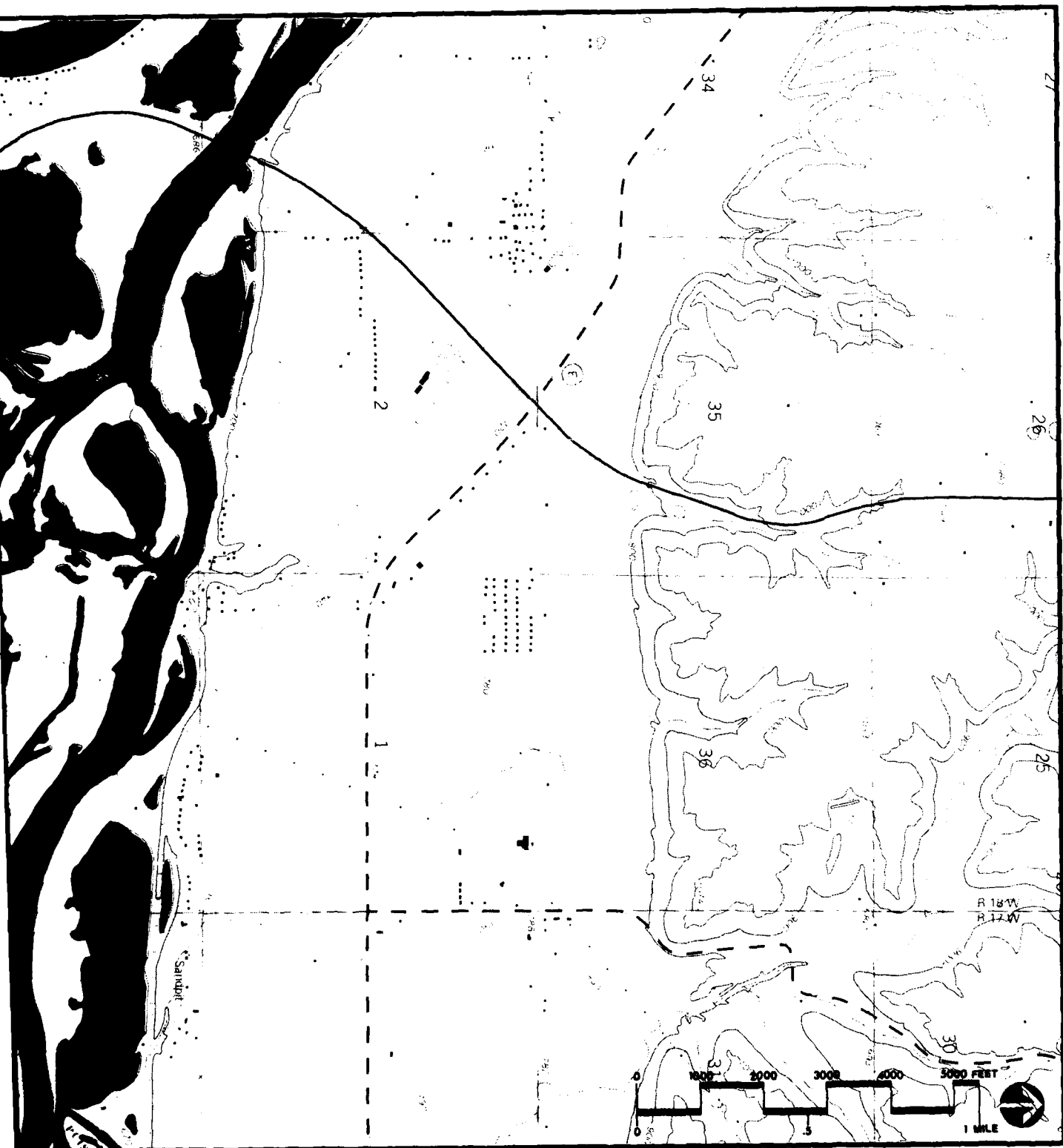
Submitted by: *Nan Hill*

Approved by: *Charles E. Warkentin*

Land Use Allocation

Pool 4 Mile 791.5-797.2 Plate 15 of 66





boundary
 refuge Boundary
 above Ohio River
 for definitions
 categories



US Army Corps
 of Engineers

Drawn by: BV/RS

Checked by: *Russell K. Smyke*

Submitted by: *Ann Hill*

Approved by: *Charles E. Wagoner*

Land Use Allocation

Pool 4 Mile 787.7-792.5 Plate 16 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

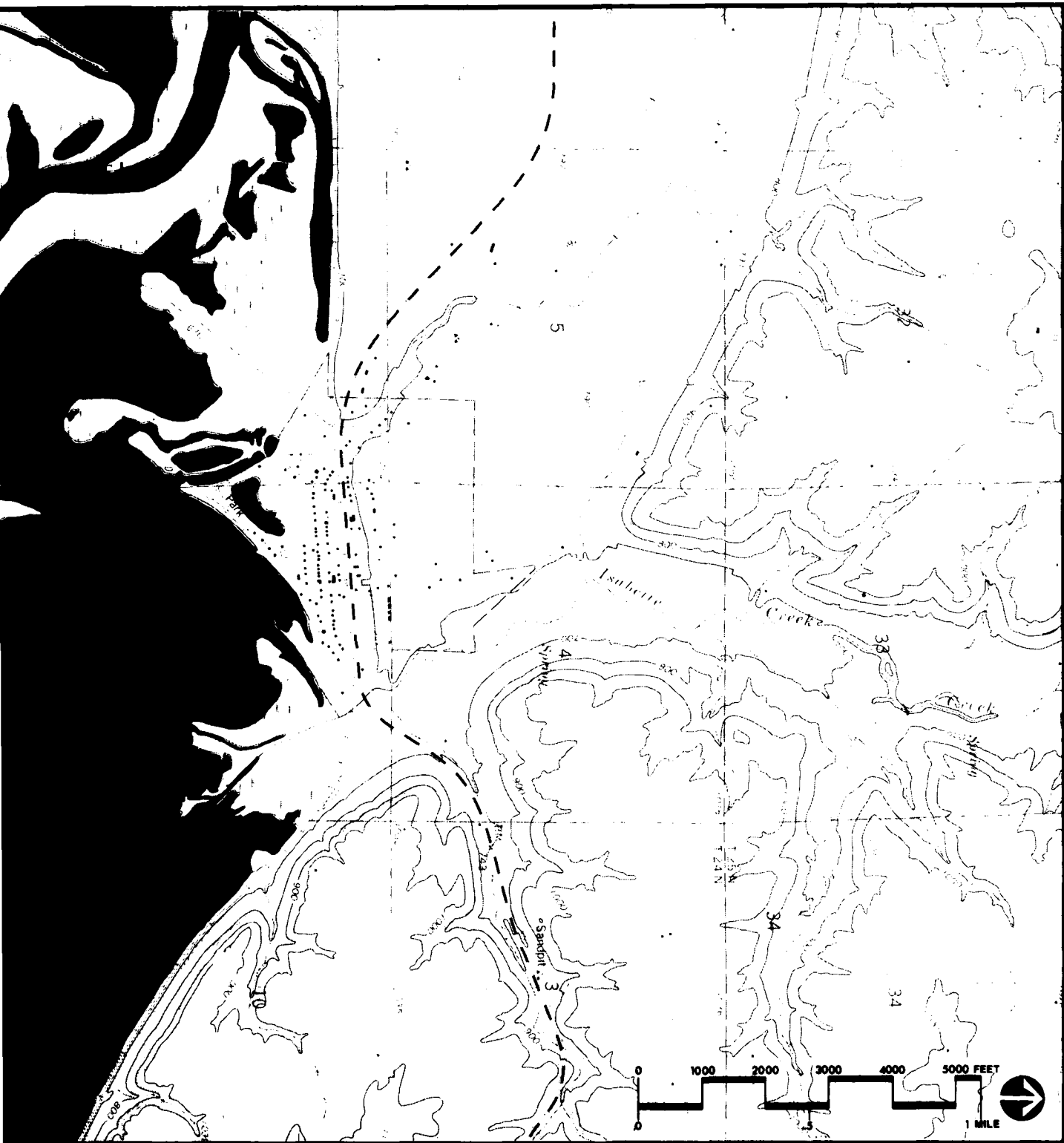
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		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

State Boundary
 FWS Refuge Boundary
 1000
 720 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers

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 ation categories



US Army Corps
 of Engineers

Drawn by: *BV/RS*

Checked by: *Russell K. Smyke*

Submitted by: *Tom Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 4 Mile 784.3-787.9 Plate 17 of 66



Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River

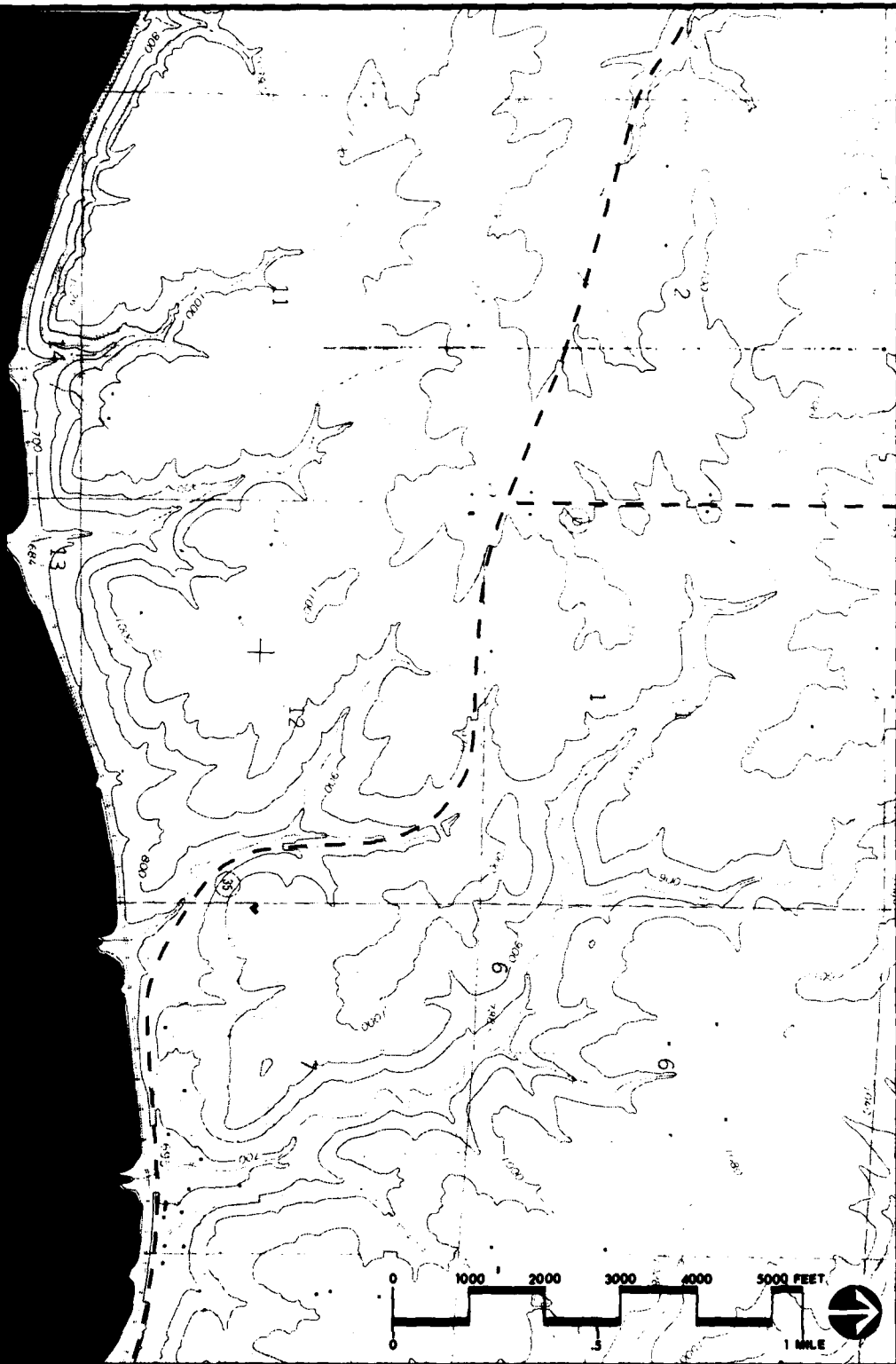
Legend	
CORPS LANDS	FWS LANDS
LAND USE ALLOCATIONS *	
	Project Operations
	Recreation / Intensive Use
	Recreation / Low-Density
	Natural Area
	Wildlife Management

--- State Boundary
--- FWS Refuge Boundary
+ 725 Miles Above Ohio River
* See text Section 5.0 for definitions of land use allocation categories



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Drawn
Checked
Submitted
Approved



Boundary
Ohio River
definitions
categories



U.S. Army Corps of Engineers
Vicksburg, Mississippi

Drawn by: BV/RS

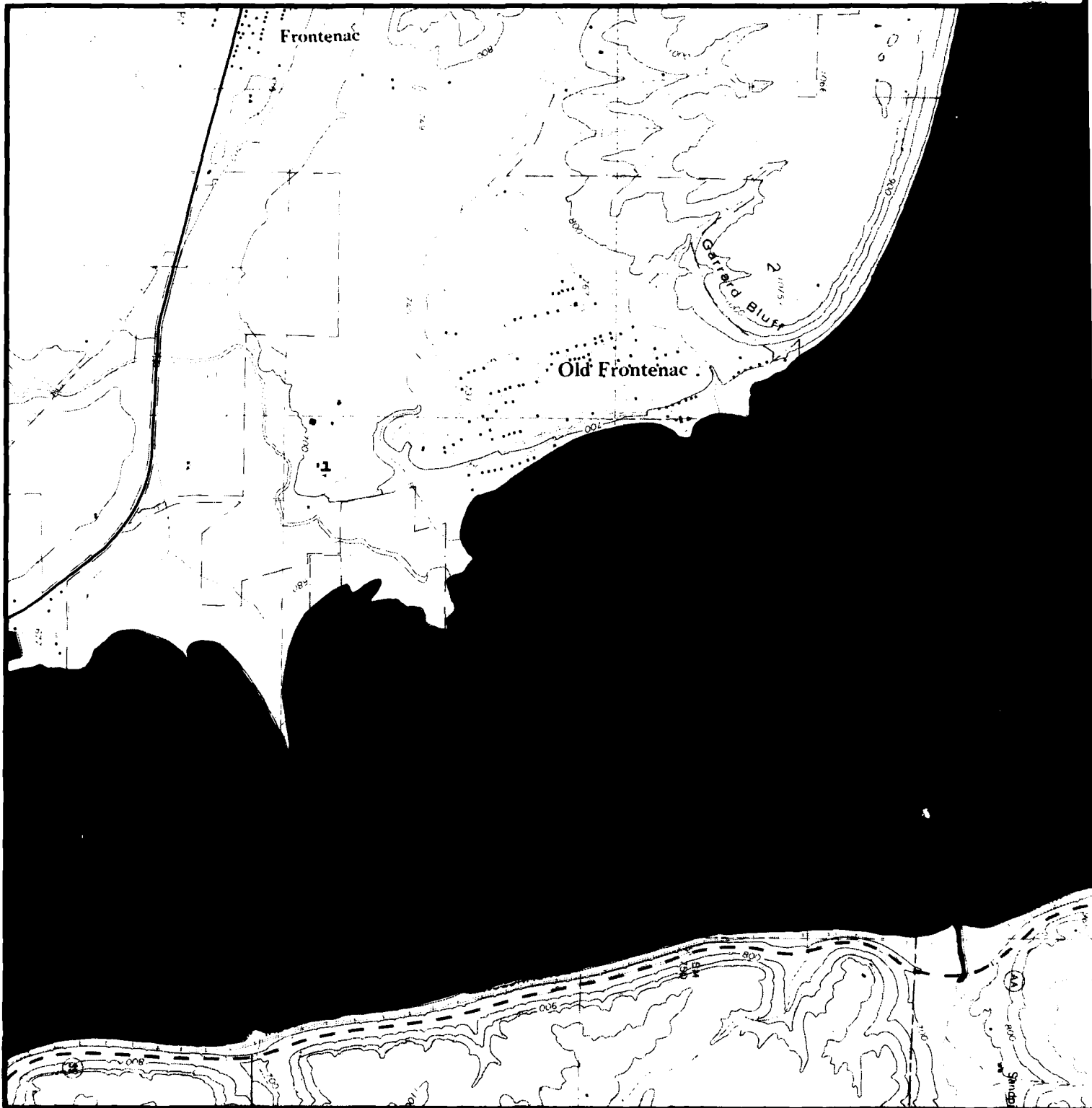
Checked by: *Russell K. Soper*

Submitted by: *Wm. Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 4 Mile 781.0-785.5 Plate 18 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

State Boundary
 FWS Refuge Boundary
 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



Boundary
Refuge Boundary
Above Ohio River
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on categories



US Army Corps
of Engineers

Drawn by: BV/RS

Checked by: *Russell K. Snyder*

Submitted by: *Norm Hill*

Approved by: *Charles E. Wankow*

Land Use Allocation

Pool 4

Mile 776.5-781.3

Plate 19 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

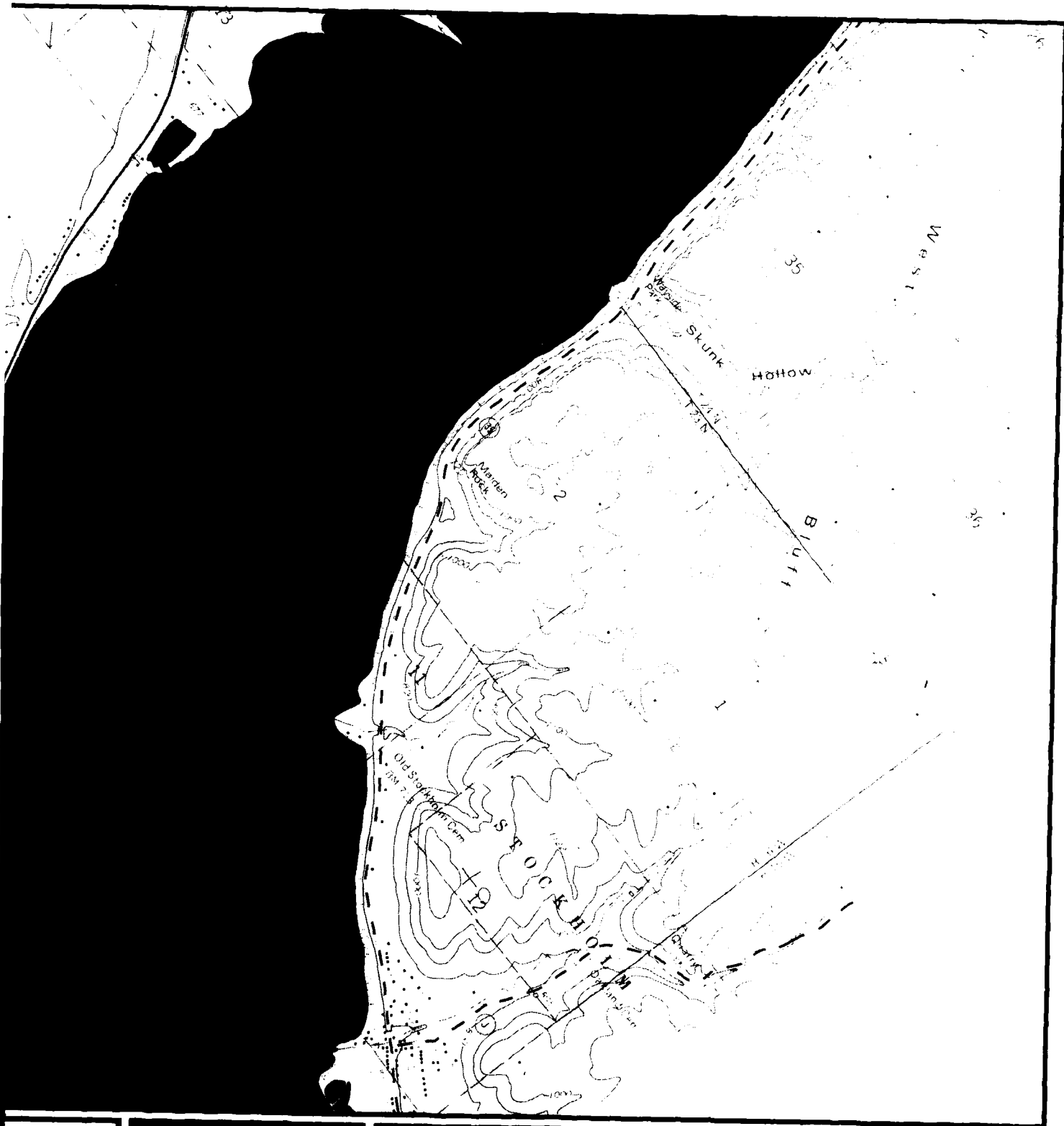
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CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 725
 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



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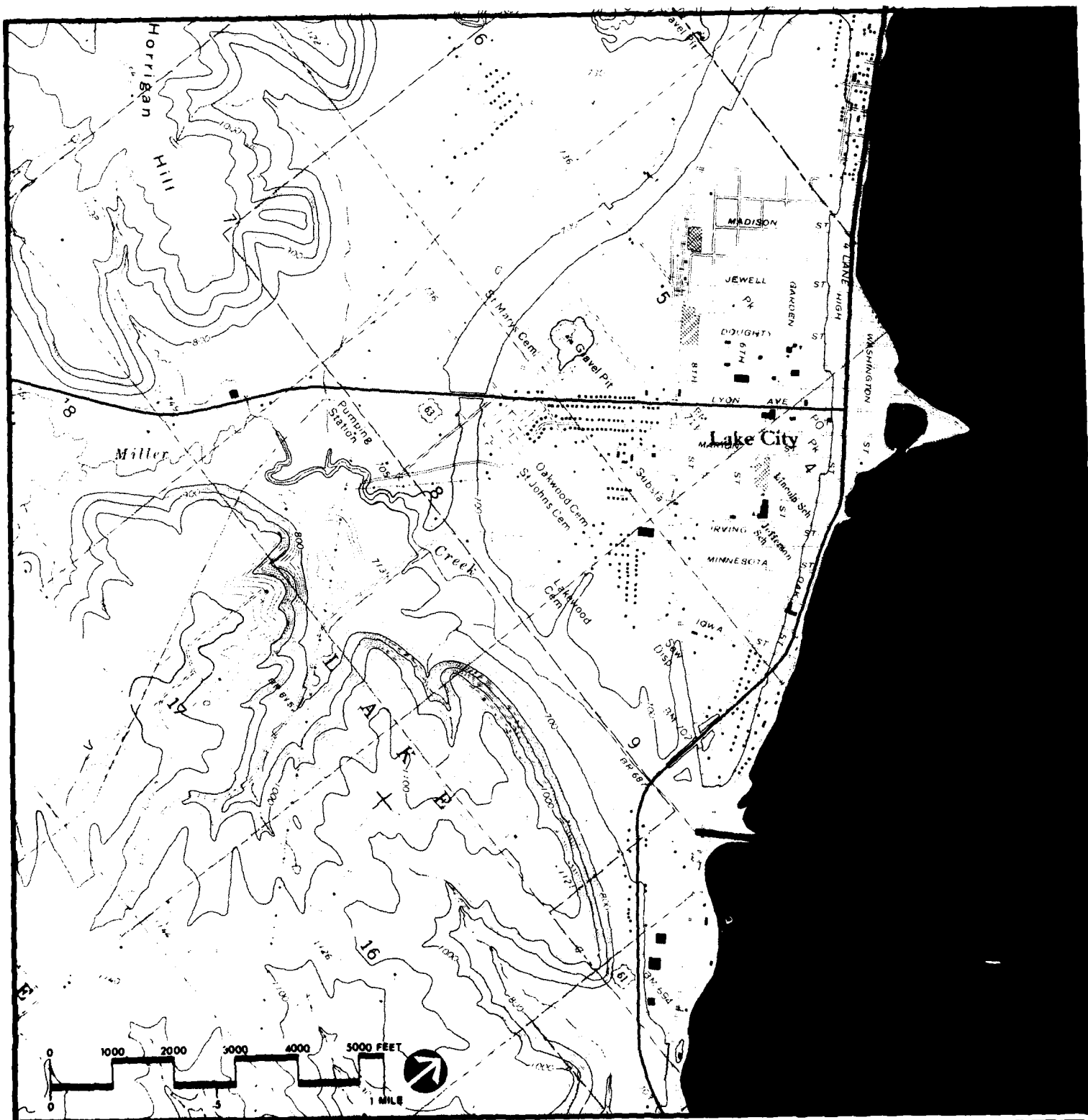


US Army Corps
of Engineers

Drawn by: *BV/RS*
Checked by: *Russell K. Sogard*
Submitted by: *Alan Hill*
Approved by: *Charles E. Wagoner*

Land Use Allocation

Pool 4 Mile 774.0-778.0 Plate 20 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
[Pattern]	[Pattern]	Project Operations
[Pattern]	[Pattern]	Recreation / Intensive Use
[Pattern]	[Pattern]	Recreation / Low-Density
[Pattern]	[Pattern]	Natural Area
[Pattern]	[Pattern]	Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



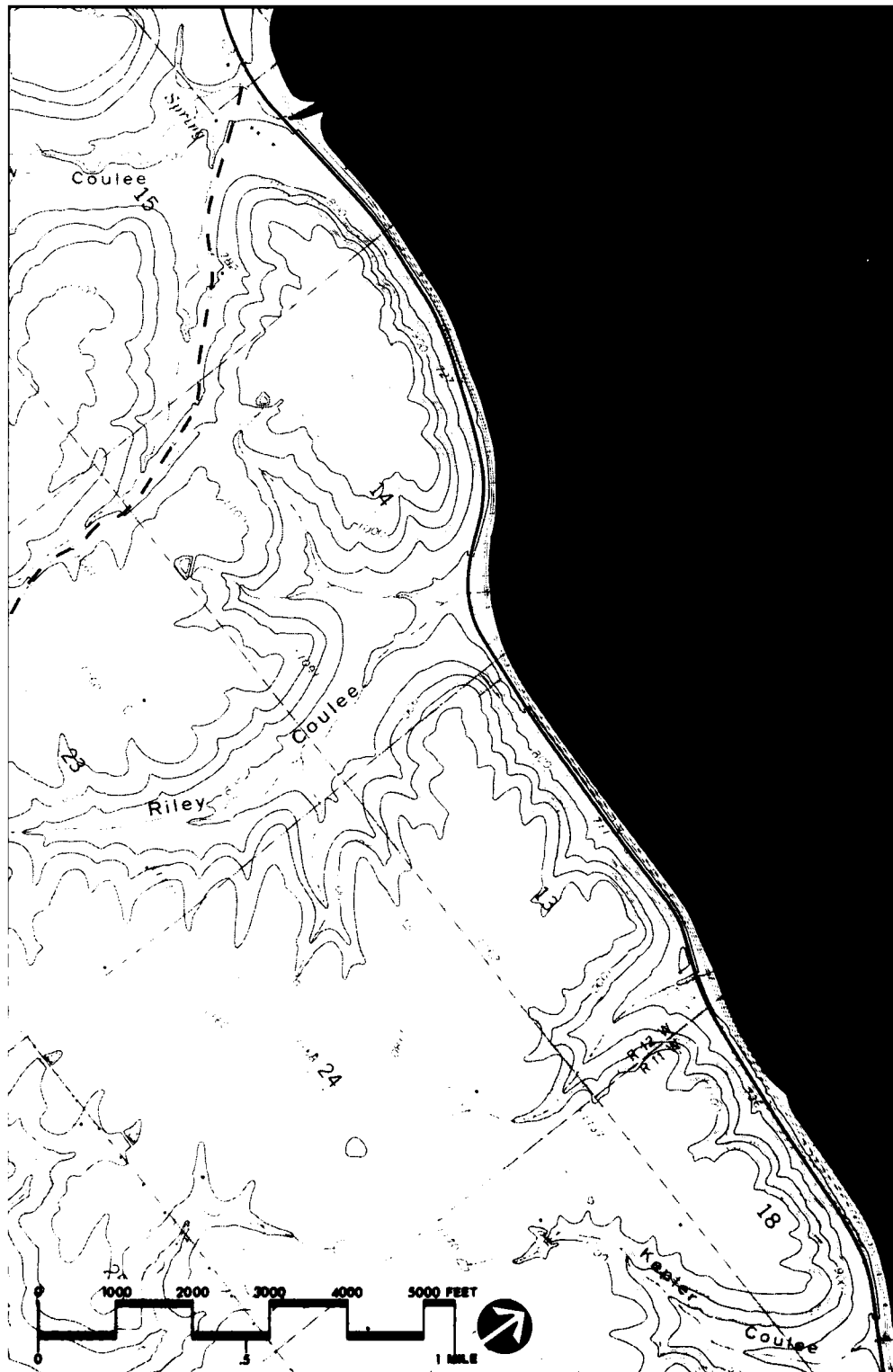
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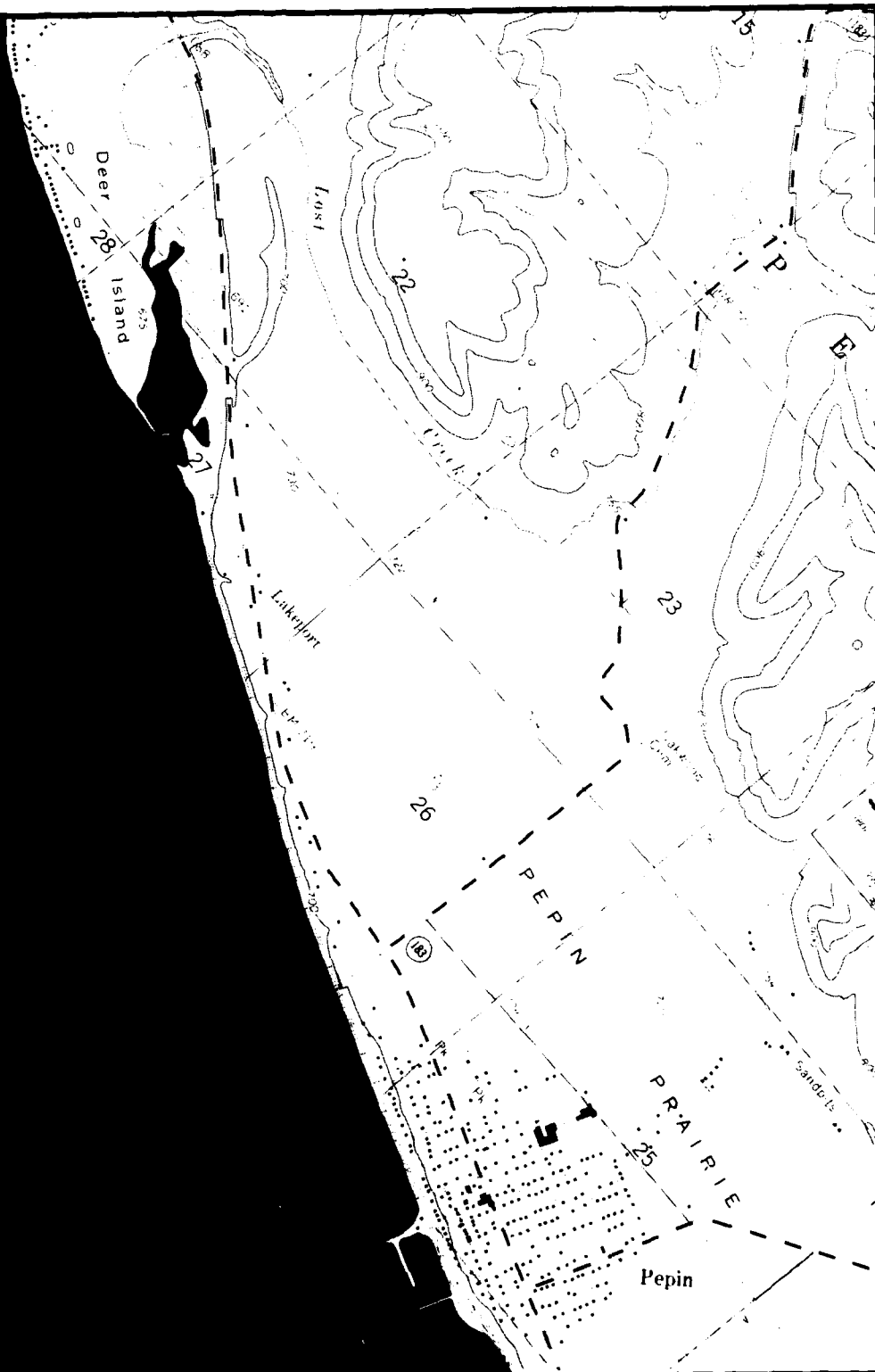


Drawn by: *BV/RS*
Checked by: *Russell K. Goggin*
Submitted by: *Norm Hill*
Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 4 Mile 770.8-774.2 Plate 21 of 66





State Boundary
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 on 50 for definitions
 location categories

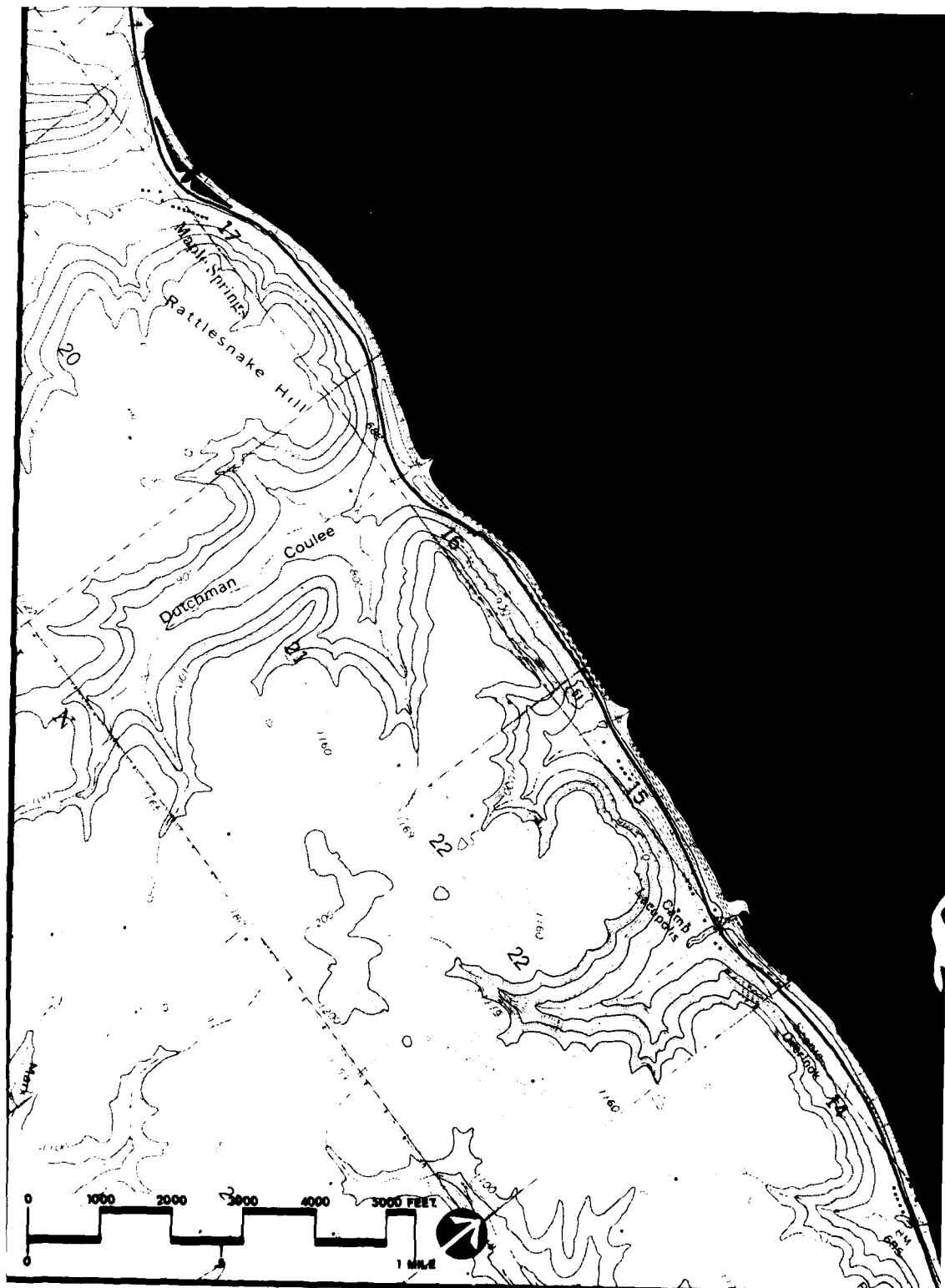


U.S. Army Corps
 of Engineers

Drawn by: *BV/RS*
 Checked by: *Russell K. Snyder*
 Submitted by: *Ken Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 4 Mile 767.3-771.0 Plate 22 of 66





State Boundary
FWS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
Location categories



US Army Corps of Engineers

Drawn by: BV/RS

Checked by: Russell K. Sogard

Submitted by: H. Hill

Approved by: Charles E. Wagoner

Land Use Allocation

Pool 4 Mile 763.9-767.5 Plate 23 of 66





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US Army Corps
of Engineers

Drawn by: *BV/RS/KN*

Checked by: *Russell K. Soper*

Submitted by: *Tom Hill*

Approved by: *Charles E. Wokoson*

Land Use Allocation

Pool 4 Mile 760.2-763.7 Plate 24 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

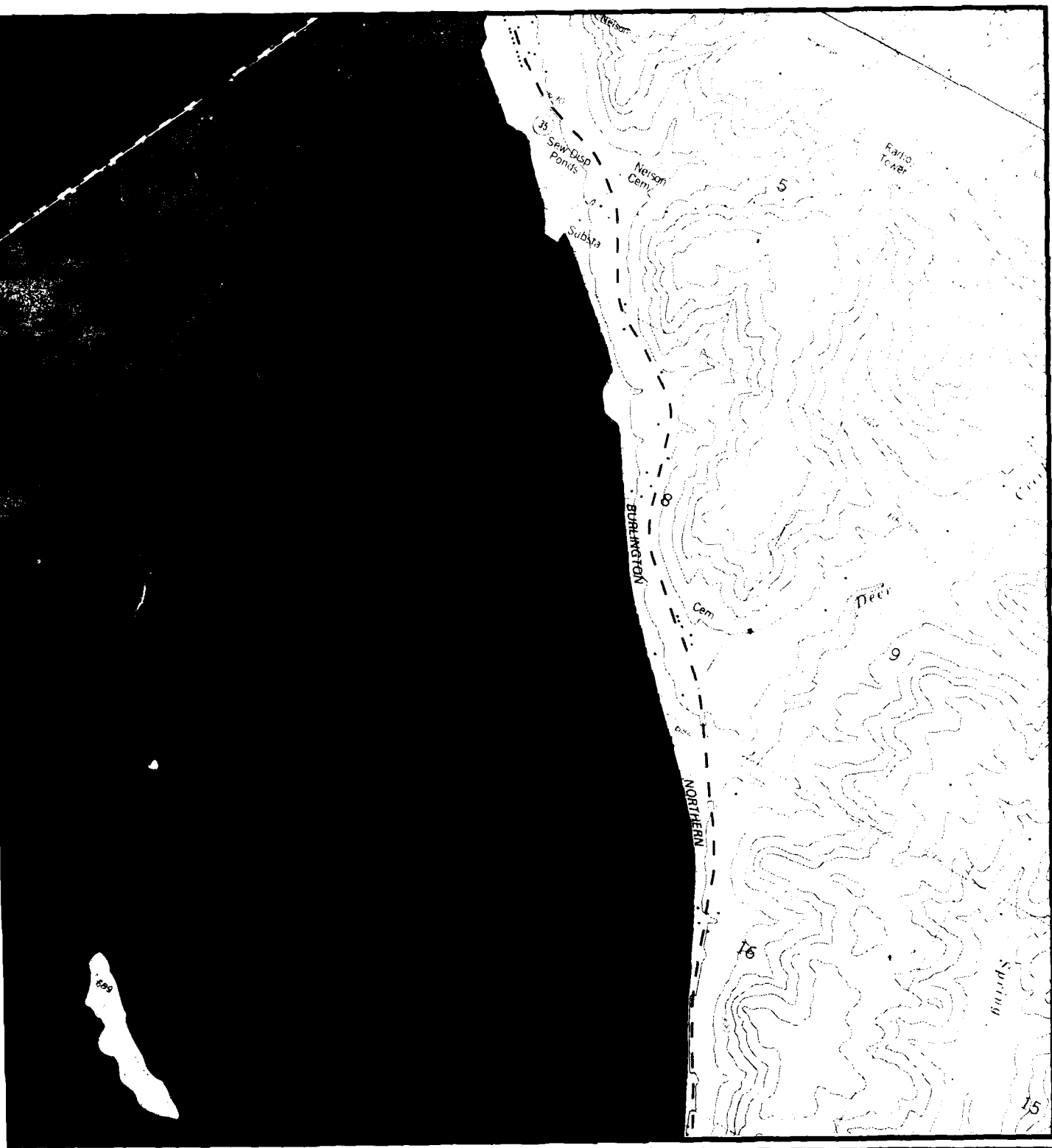
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CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 * See text Section 50 for definitions
 of land use allocation categories



US Army Corps
of Engineers



Boundary
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 Above Ohio River
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Drawn by: *B.V./RS/LN.*
 Checked by: *Russell K. Soper*
 Submitted by: *John Hill*
 Approved by: *Charles E. Wakenow*

Land Use Allocation
 Pool 4 Mile 757.3-761.5 Plate 25 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

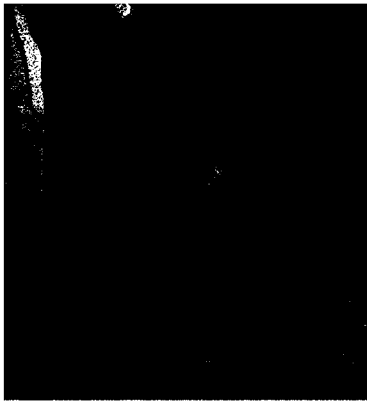
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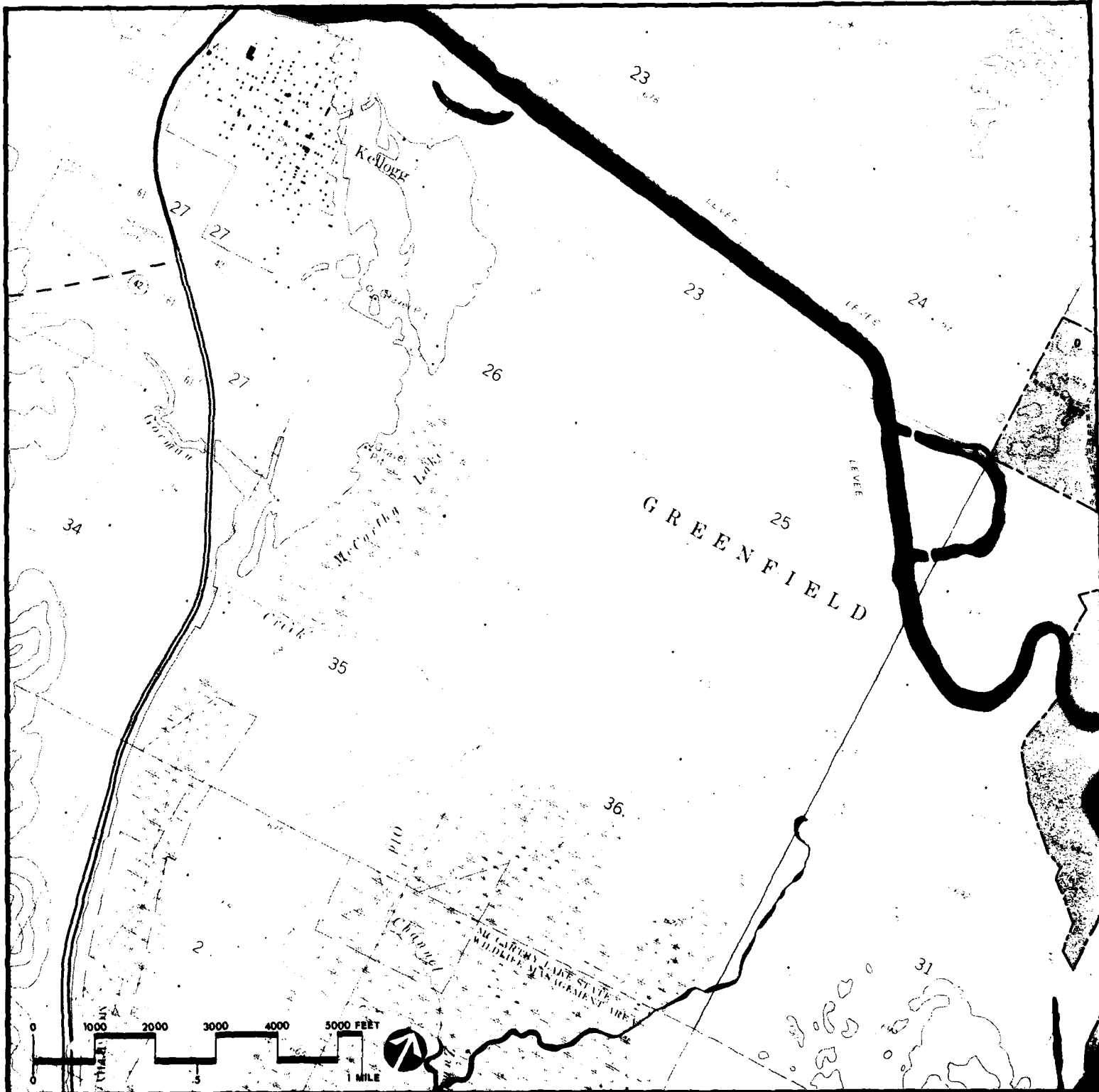
CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 1000
 725 Miles Above Ohio River
 * See text Section 5.0 for definitions
 of land use allocation categories



U.S. Army Corps of Engineers
 Vicksburg, Mississippi





Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
[Pattern]	[Pattern]	Project Operations
[Pattern]	[Pattern]	Recreation / Intensive Use
[Pattern]	[Pattern]	Recreation / Low Density
[Pattern]	[Pattern]	Natural Area
[Pattern]	[Pattern]	Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 MMS
 + 725 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
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US Army Corps
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Drawn by *BV/RS/LN*

Checked by *Russell K. Saylor*

Submitted by *Wm. Hill*

Approved by *Charles E. W. W. W.*

Land Use Allocation

L & D 4 Mile 749.7-754.0 Plate 27 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

- State Boundary
- FWS Refuge Boundary
- + Mile 725 Miles Above Ohio River
- * See text Section 5.0 for definitions of land use allocation categories



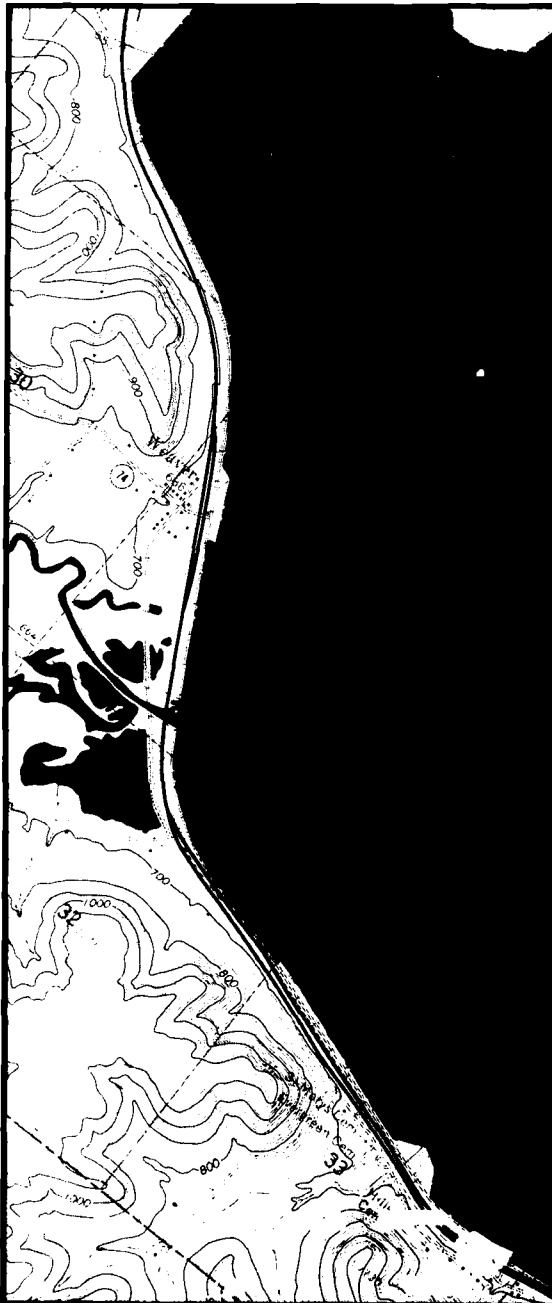
US Army Corps
of Engineers



Resource Management Upper Mississippi River

		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

+ 880
725 Miles Above Ohio River
* See text Section 50 for definitions of land use allocation categories



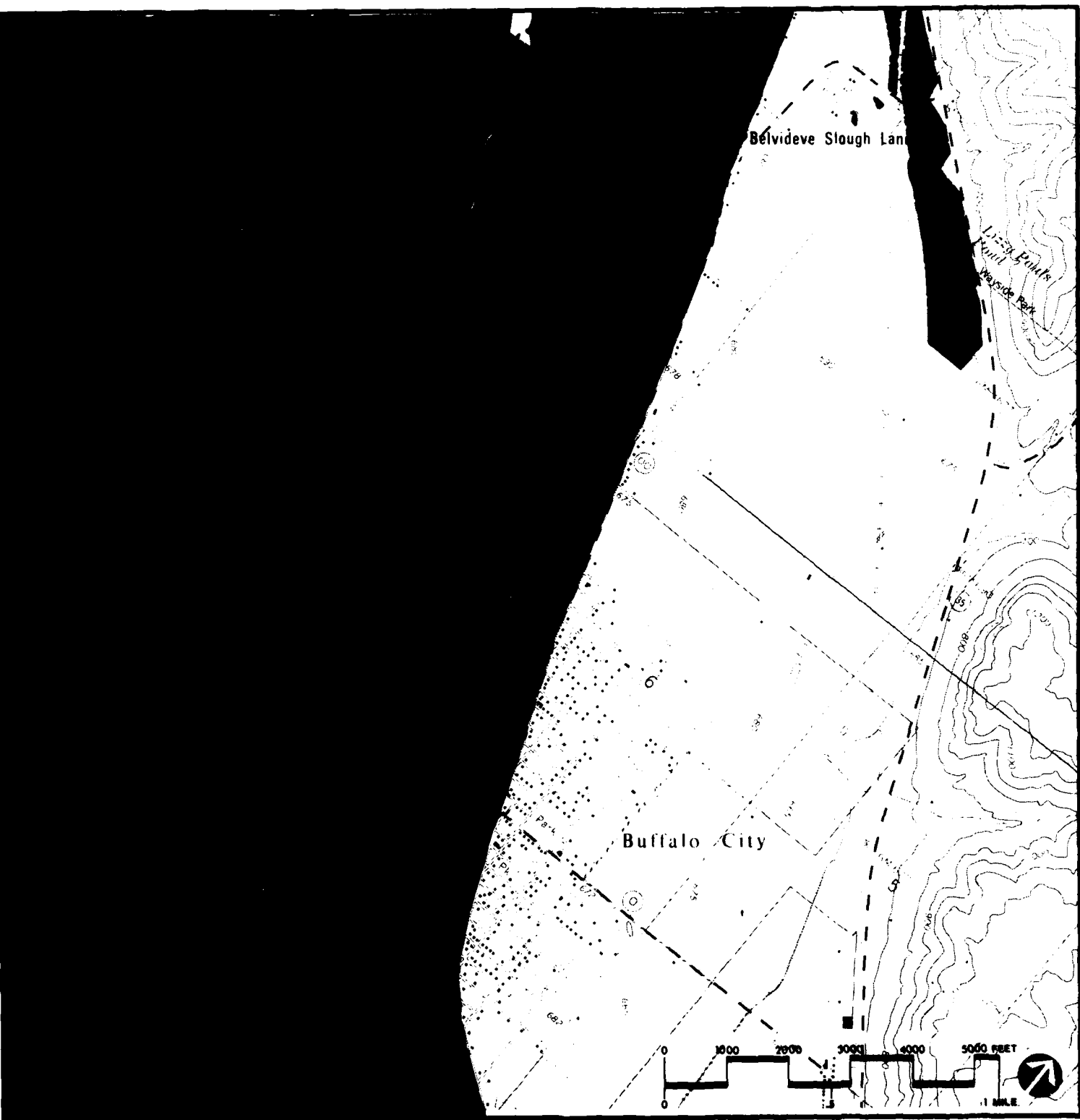
Master Plan for Public Use Development and Resource Management Upper Mississippi River

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

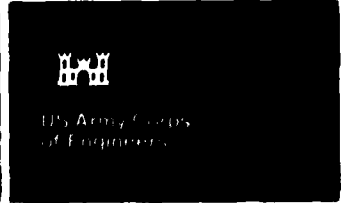
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----- FWS Refuge Boundary
+ 880
725 Miles Above Ohio River
* See text Section 50 for definitions of land use allocation categories



U.S. Army Corps of Engineers
Mississippi River Division

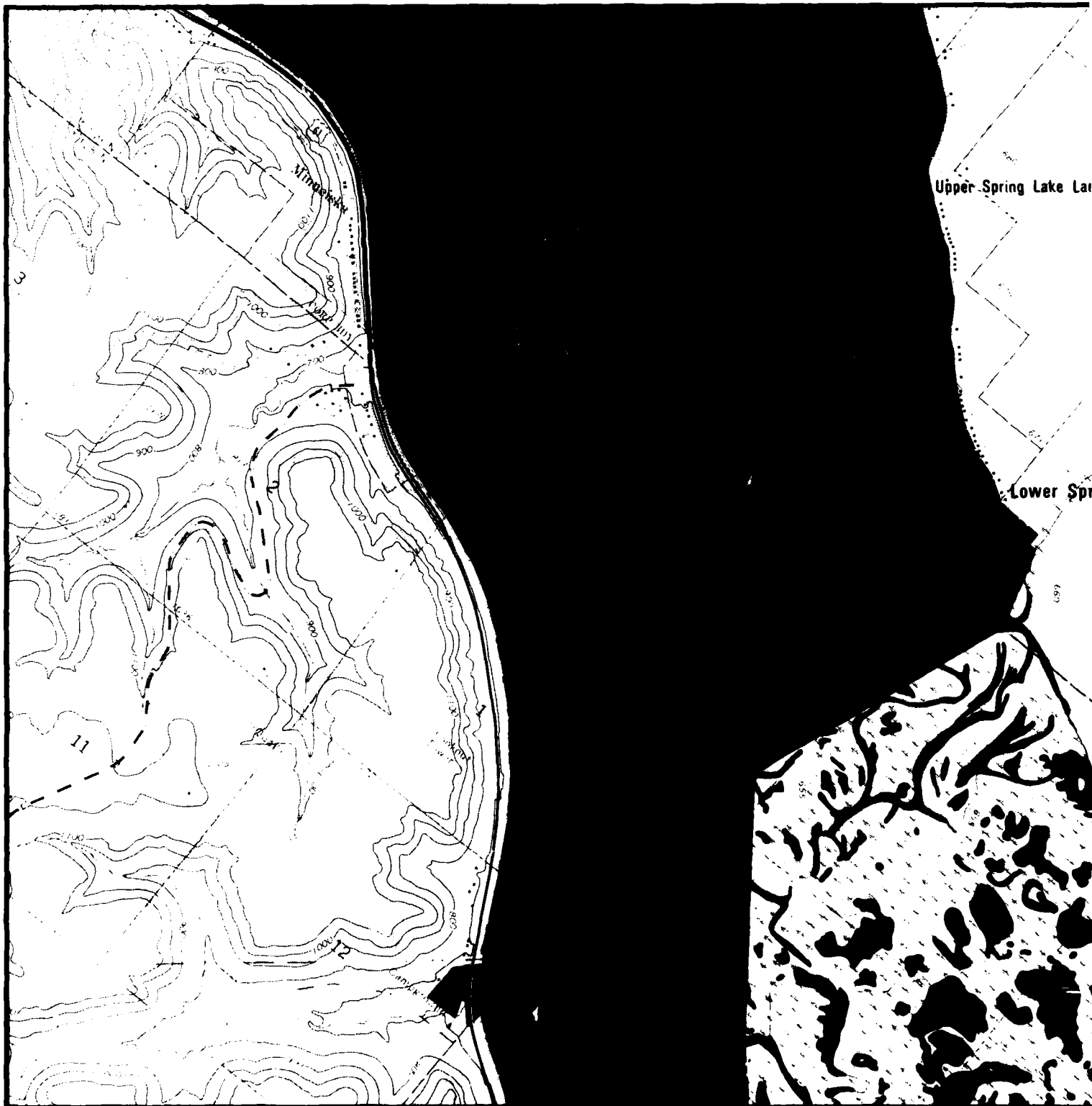


— State Boundary
 — FWS Refuge Boundary
 Miles Above Ohio River
 Section 50 for definitions
 see allocation categories



Drawn by: *BV/RS/K.N.*
 Checked by: *Russell K. Sapp*
 Submitted by: *Tom Hill*
 Approved by: *Charles E. Wagoner*

Land Use Allocation
 Pool 5 Mile 742.9-747.2 Plate 29 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

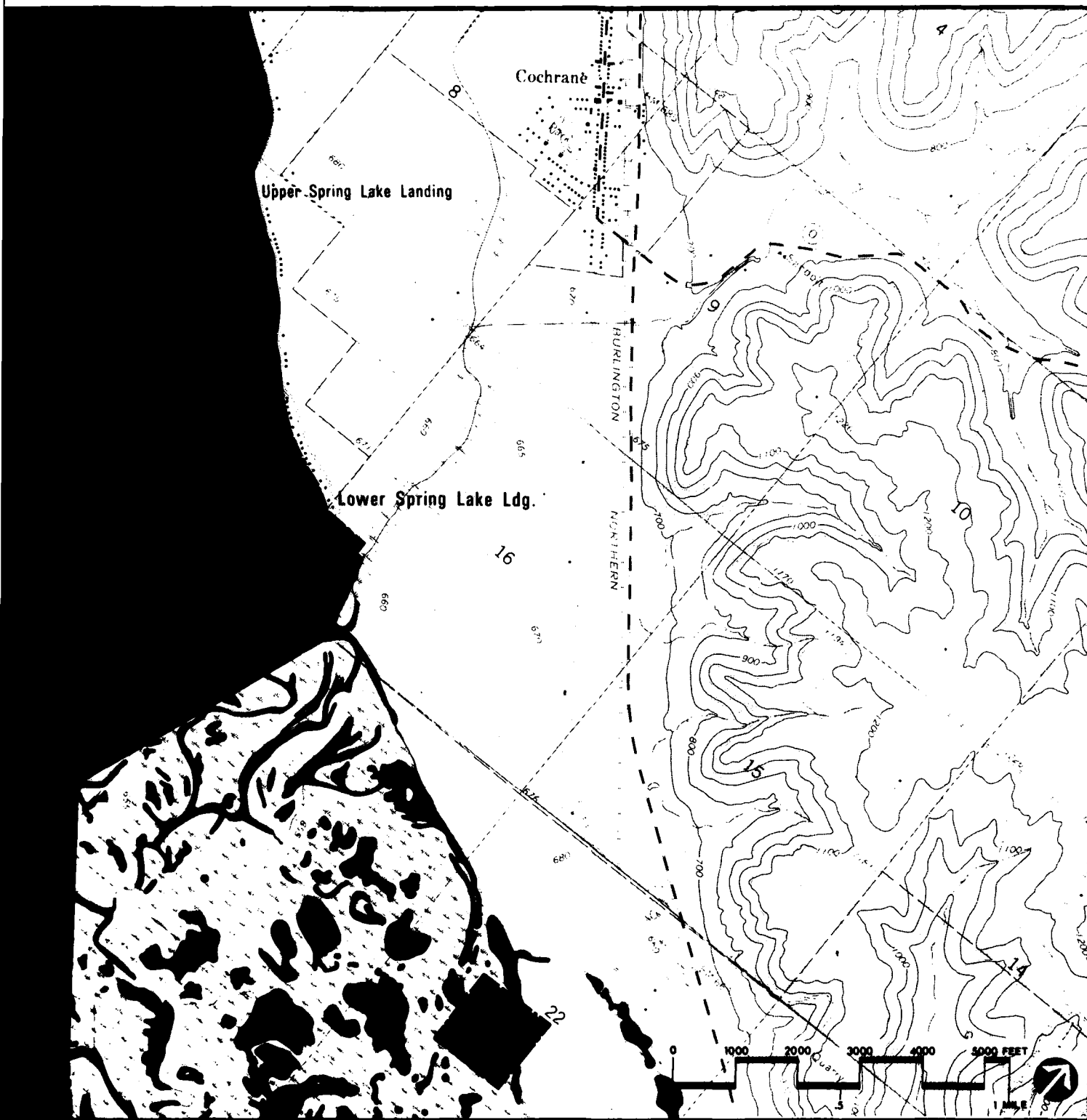
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CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

- State Boundary
- FWS Refuge Boundary
- + Mile 728 Miles Above Ohio River
- * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



State Boundary
 FWS Refuge Boundary
 Miles Above Ohio River
 Section 50 for definitions
 use allocation categories



Drawn by: *BV/RS/K.N.*
 Checked by: *Russell K. Smythe*
 Submitted by: *Ken Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation
 Pool 5 Mile 739.6-743.1 Plate 30 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
[Pattern]	[Pattern]	Project Operations
[Pattern]	[Pattern]	Recreation / Intensive Use
[Pattern]	[Pattern]	Recreation / Low-Density
[Pattern]	[Pattern]	Natural Area
[Pattern]	[Pattern]	Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile
 725 Miles Above Ohio River

* See text Section 50 for definitions
of land use allocation categories



US Army Corps
of Engineers



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US Army Corps
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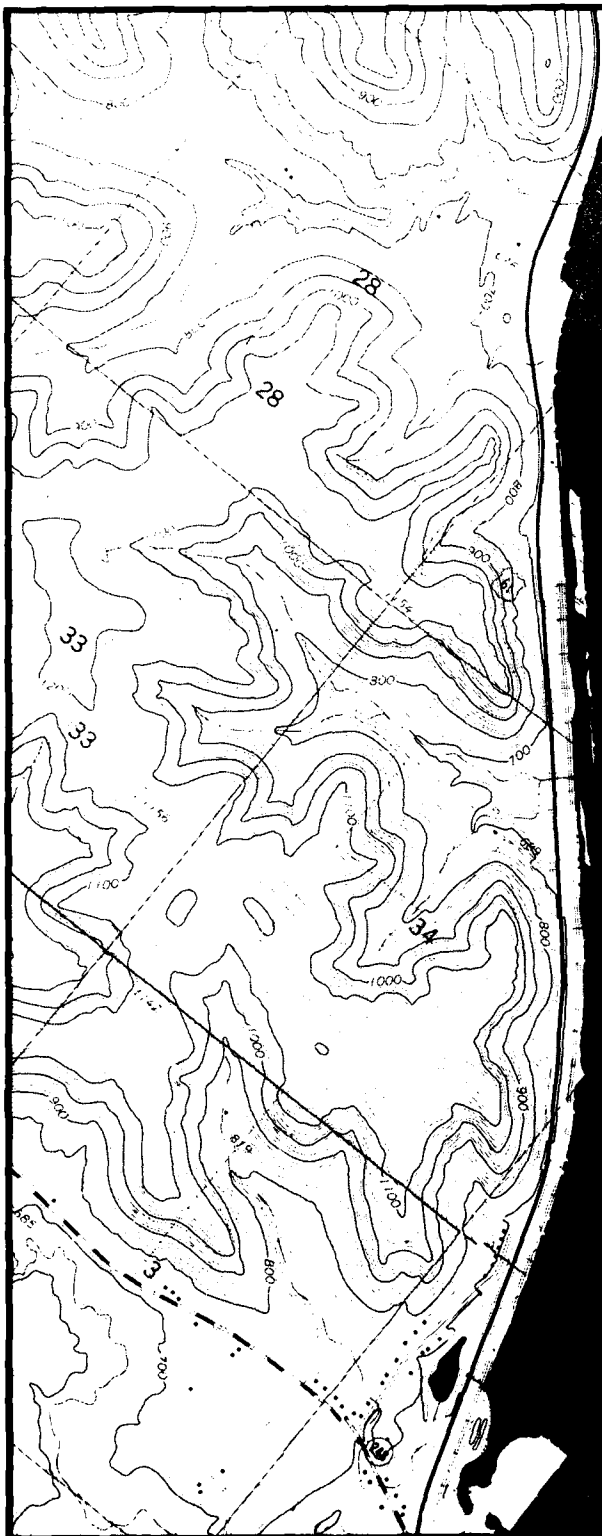
Checked by: *Russell K. Sengler*

Submitted by: *Jim Hill*

Approved by: *Charles E. Wakeman*

Land Use Allocation

L & D 5 Mile 736.0-739.8 Plate 31 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

CORPS FWS		LAND USE ALLOCATIONS *
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile
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* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



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on 50 for definitions
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U.S. Army Corps of Engineers
Ft. Belvoir, Mo.

Drawn by: *BN/RS/KN.*

Checked by: *Russell K. Snyder*

Submitted by: *Mr. Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 5A Mile 732.2-736.2 Plate 32 of 66

27



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
[Symbol]	[Symbol]	Project Operations
[Symbol]	[Symbol]	Recreation / Intensive Use
[Symbol]	[Symbol]	Recreation / Low-Density
[Symbol]	[Symbol]	Natural Area
[Symbol]	[Symbol]	Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 728 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



U.S. Army Corps
of Engineers



State Boundary
FWS Refuge Boundary
Miles Above Ohio River
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U.S. Army Corps
of Engineers

Drawn by: *BV/RS/KN.*

Checked by: *Russell K. Sogler*

Submitted by: *Ken Hill*

Approved by: *Charles E. Wokoson*

Land Use Allocation

L & D 5A Mile 728.4-732.4 Plate 33 of 66



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US Army Corps
of Engineers

Drawn by BV/RS/K.N.
Checked by *Russell K. Sogler*
Submitted by *Thom Hill*
Approved by *Charles E. Winkler*

Land Use Allocation

Pool 6 Mile 725.8-729.8 Plate 34 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend		LAND USE ALLOCATIONS *
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



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U.S. Army Corps of Engineers

Drawn by: *BN/RS/LN*

Checked by: *Russell K. Sogler*

Submitted by: *Jim Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 6 Mile 722.4-726.0 Plate 35 of 66

Use Development and Resource Management Upper Mississippi River

	Project Operations		State Boundary
	Recreation / Intensive Use		FWS Refuge Boundary
	Recreation / Low-Density		Miles Above Ohio River
	Natural Area		
	Wildlife Management		

* See text Section 5.0 for definitions of land use allocation categories



Master Plan for Public Use Development and Resource Management Upper Mississippi River

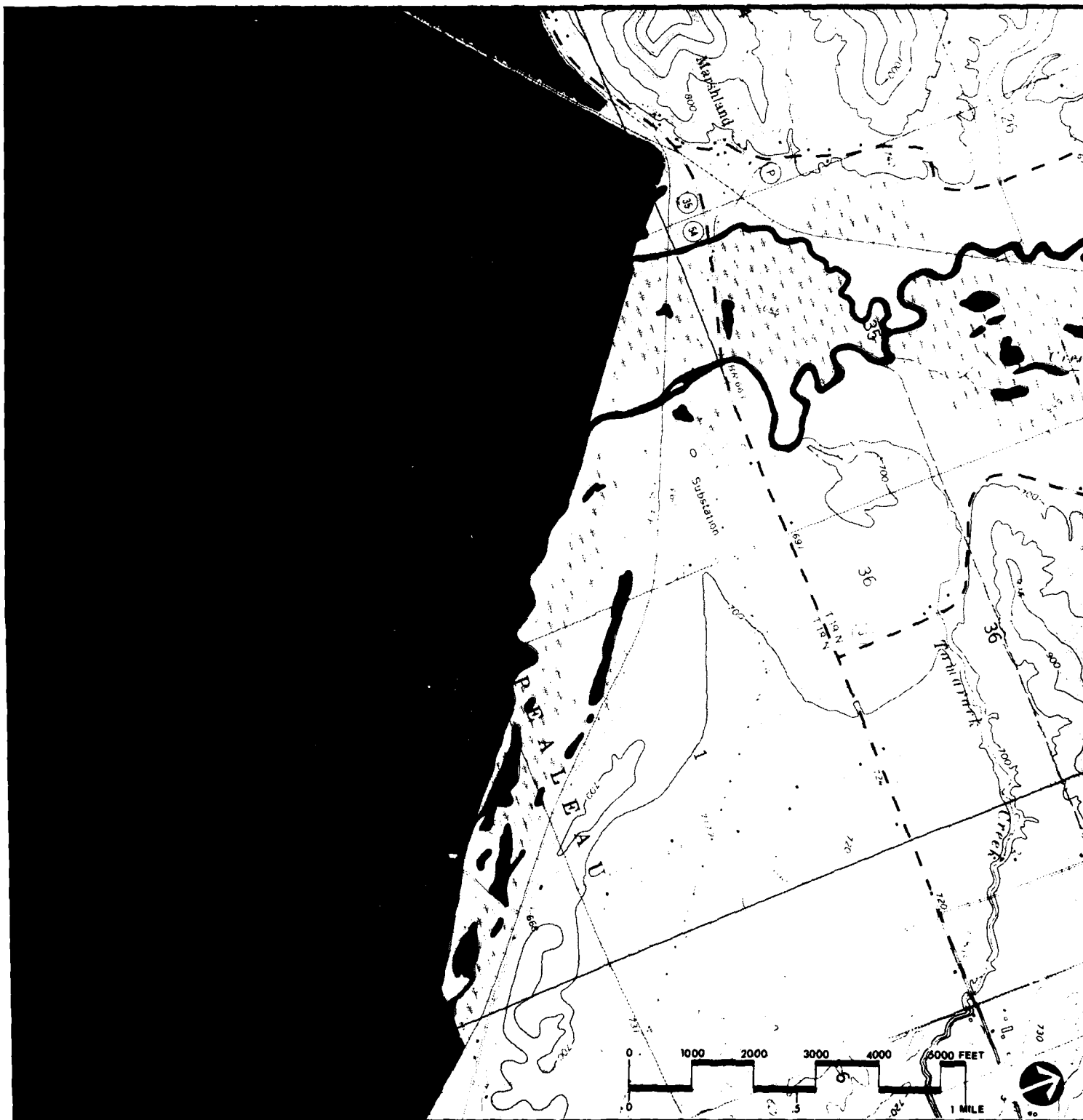
CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

* See text Section 5.0 for definitions of land use allocation categories



US Army Corps of Engineers

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State Boundary
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 Miles Above Ohio River
 Section 50 for definitions
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 of Engineers

Drawn by: *EV/RS/K.N.*

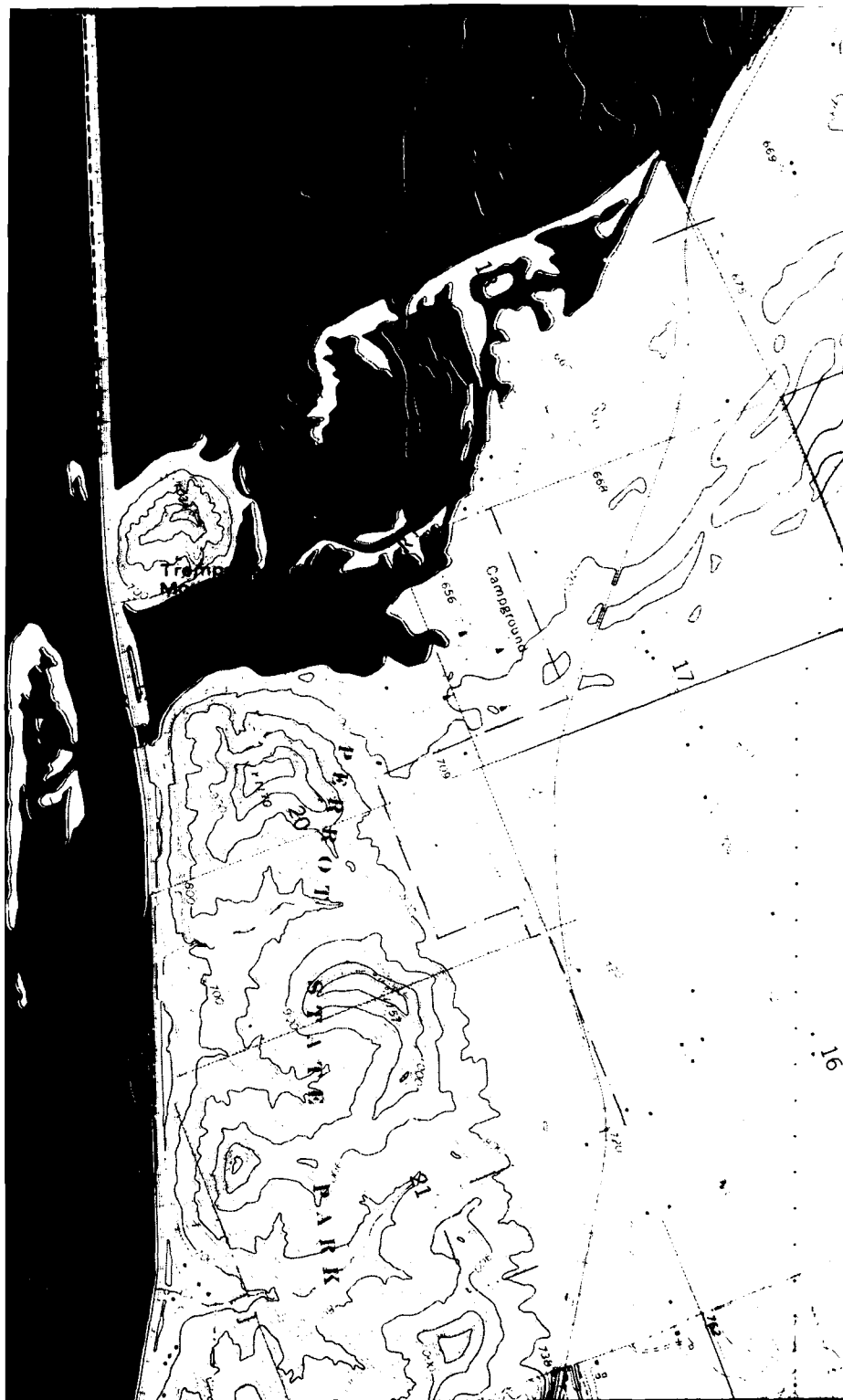
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Submitted by: *Thom Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 6 Mile 718.9-722.6 Plate 36 of 66



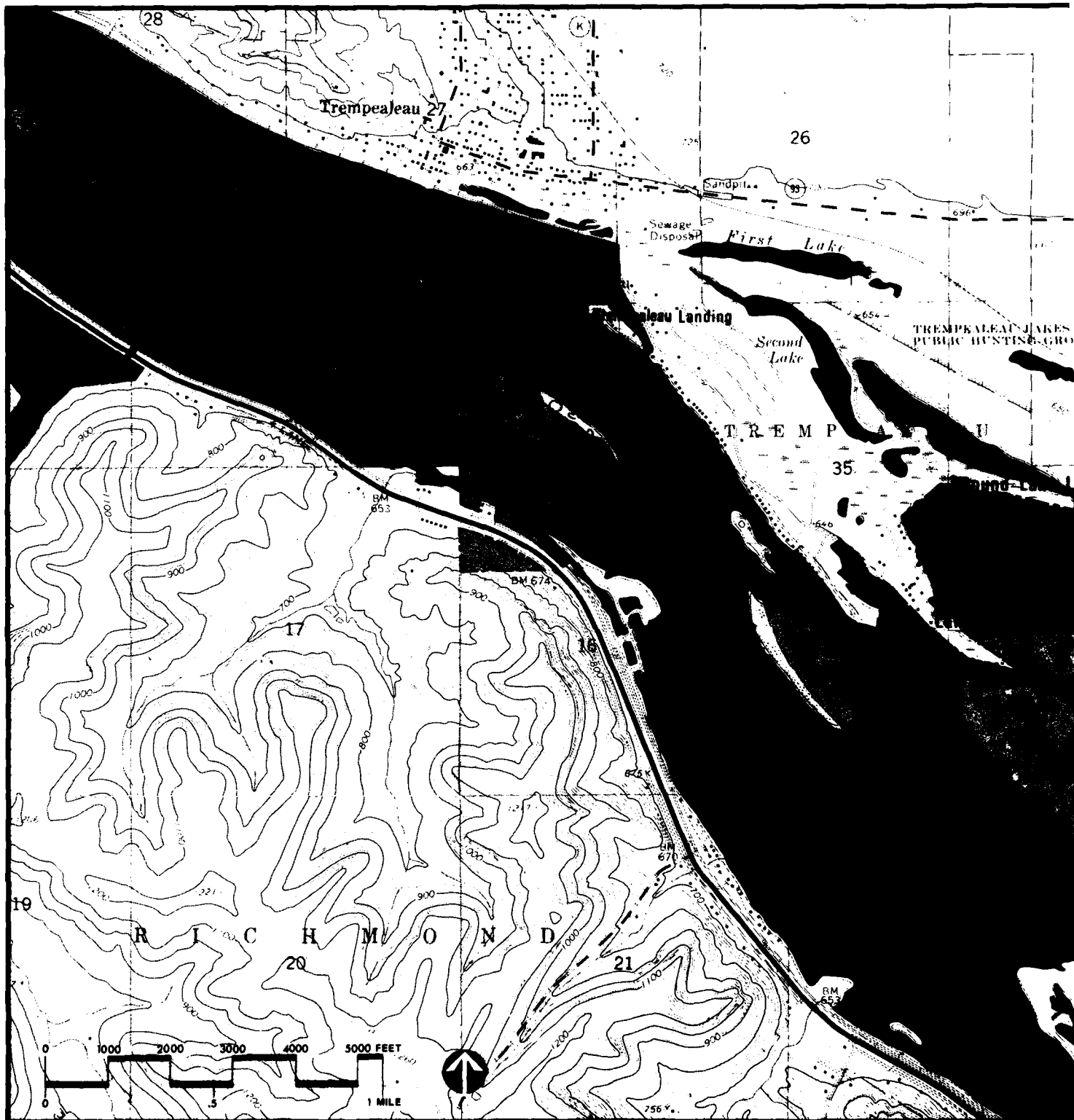


State Boundary
FWS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
allocation categories



Drawn by: *EV/RS/LN*
Checked by: *Russell K. Sogge*
Submitted by: *Thom Hill*
Approved by: *Charles E. Wagoner*

Land Use Allocation
Pool 6 Mile 715.4-719.1 Plate 37 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

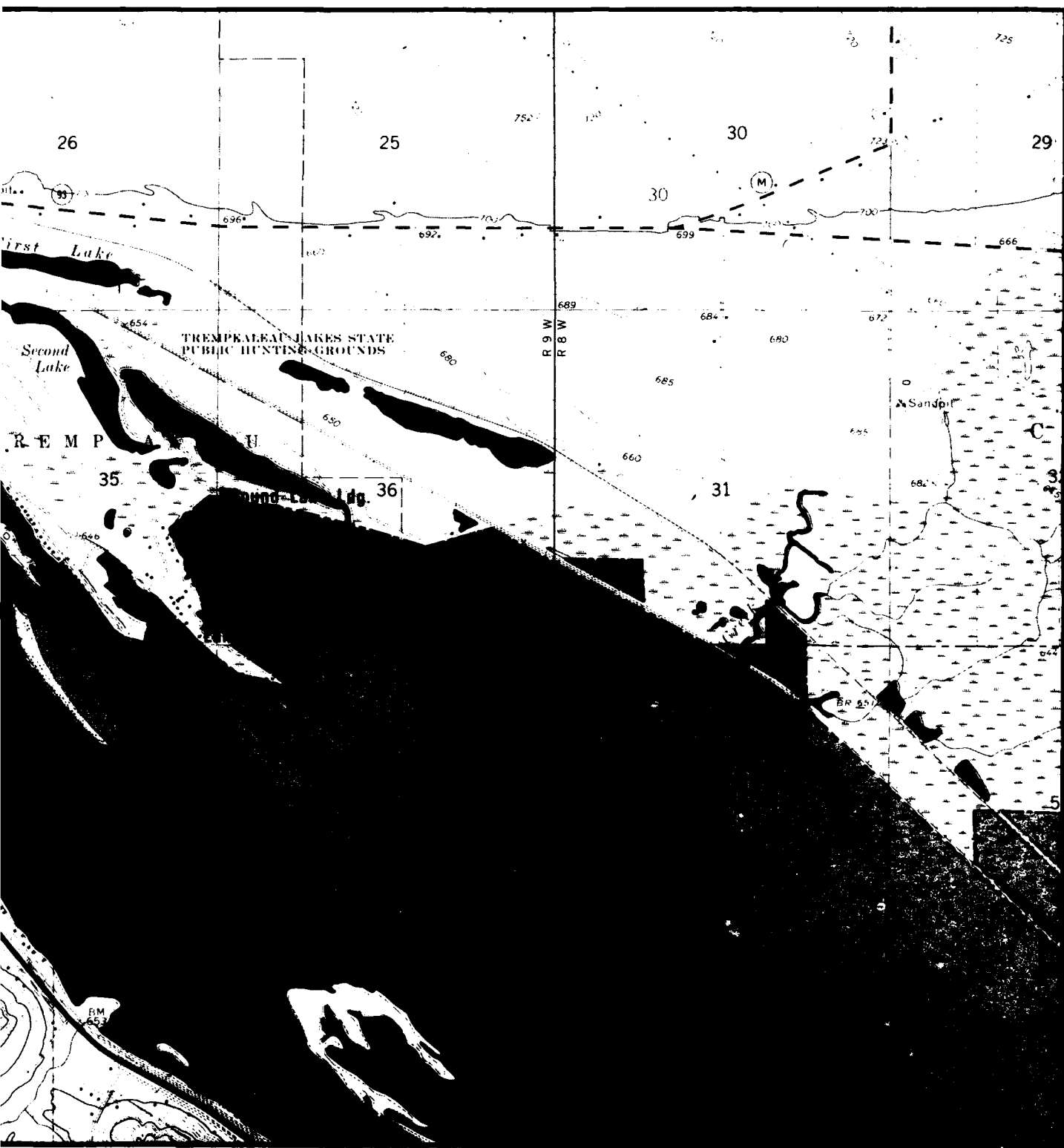
CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 726 Miles Above Ohio River

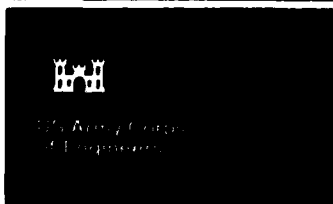
* See text Section 5.0 for definitions of land use allocation categories



US Army Corps
of Engineers

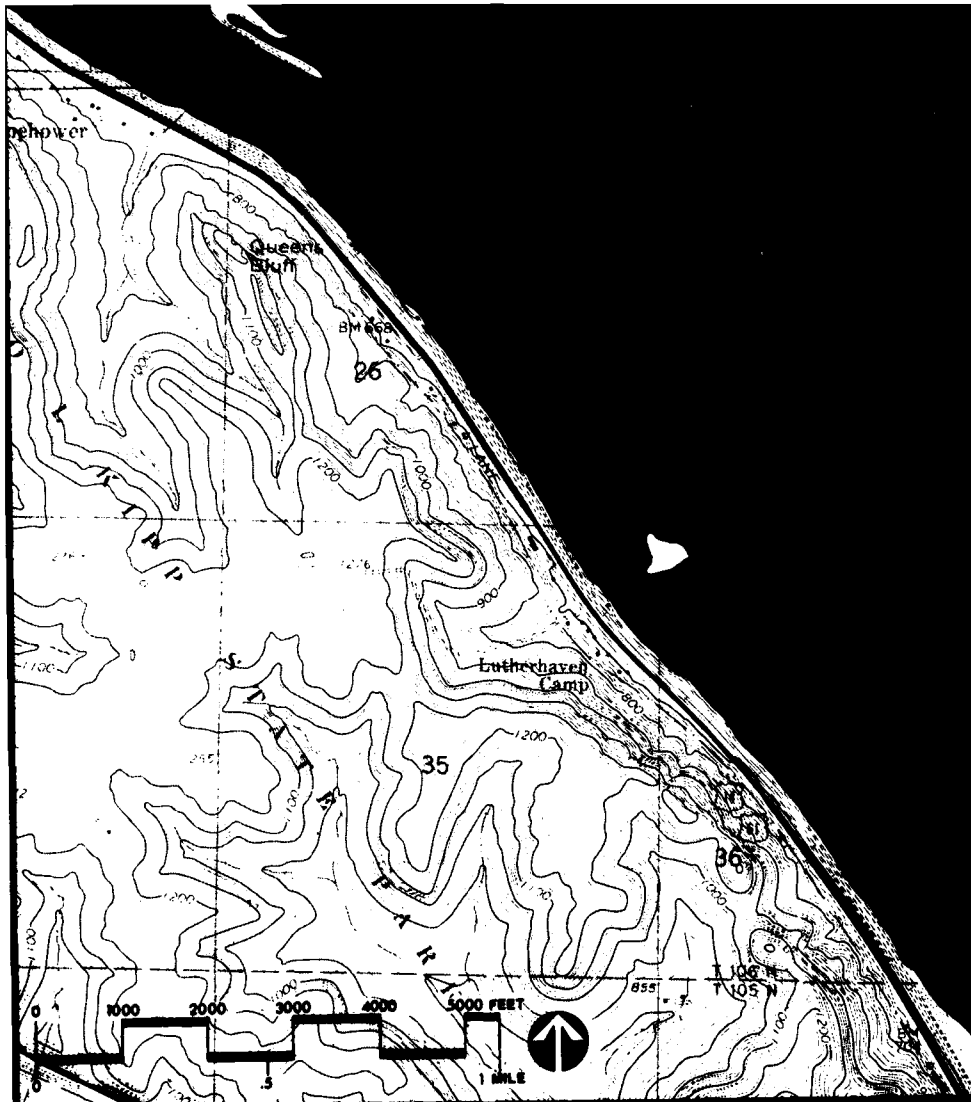


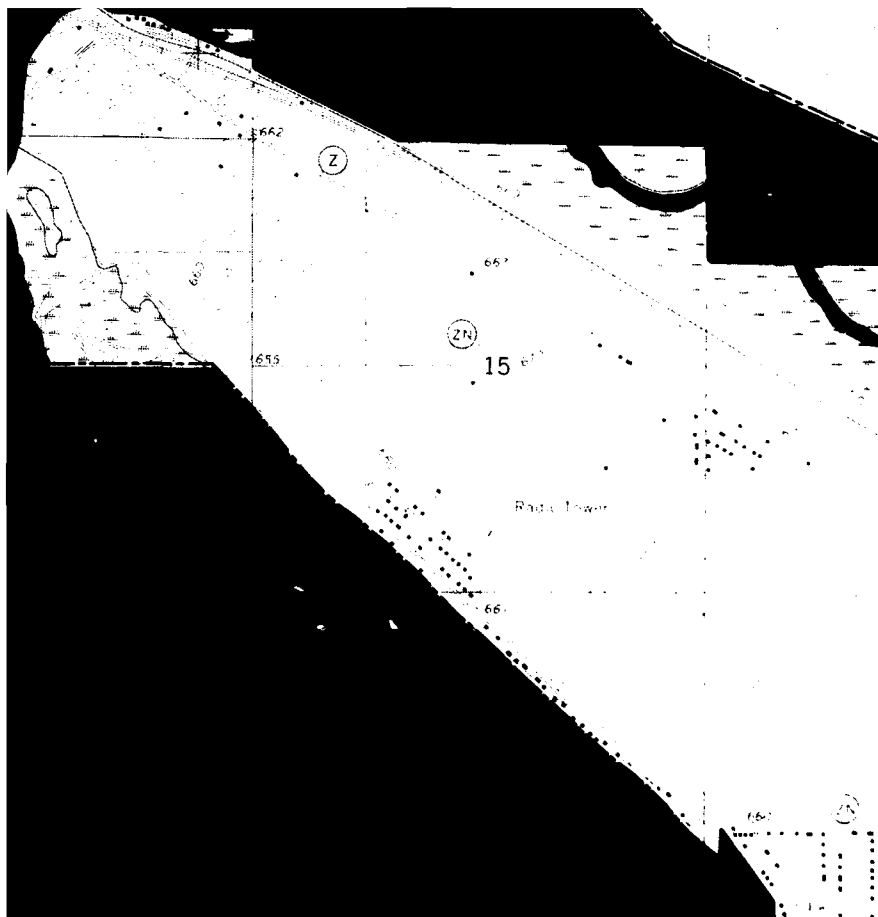
e Boundary
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Drawn by: *B.V./RS/K.N.*
 Checked by: *Russell K. Soper*
 Submitted by: *Tom Hill*
 Approved by: *Charles E. Wakenow*

Land Use Allocation
L & D 6 Mile 711.0-716.0 Plate 38 of 66







Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend		LAND USE ALLOCATIONS *
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps of Engineers

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State Boundary
FWS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
allocation categories



US Army Corps
of Engineers

Drawn by: *EV/RS/LN*

Checked by: *Russell K. Sogard*

Submitted by: *Norm Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

L & D 5A Mile 728.4-732.4 Plate 33 of 66

Brice Prairie Landing

26



State Boundary
FWS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
allocation categories



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Drawn by: *EV/RS/LN*

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Submitted by: *Norm Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 7 Mile 703.7-708.3 Plate 40 of 66

Use Development and
Resource Management
Upper Mississippi River

		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- FWS Refuge Boundary
+ Miles Above Ohio River
* See text Section 50 for definitions of land use allocation categories

US Army Corps
of Engineers

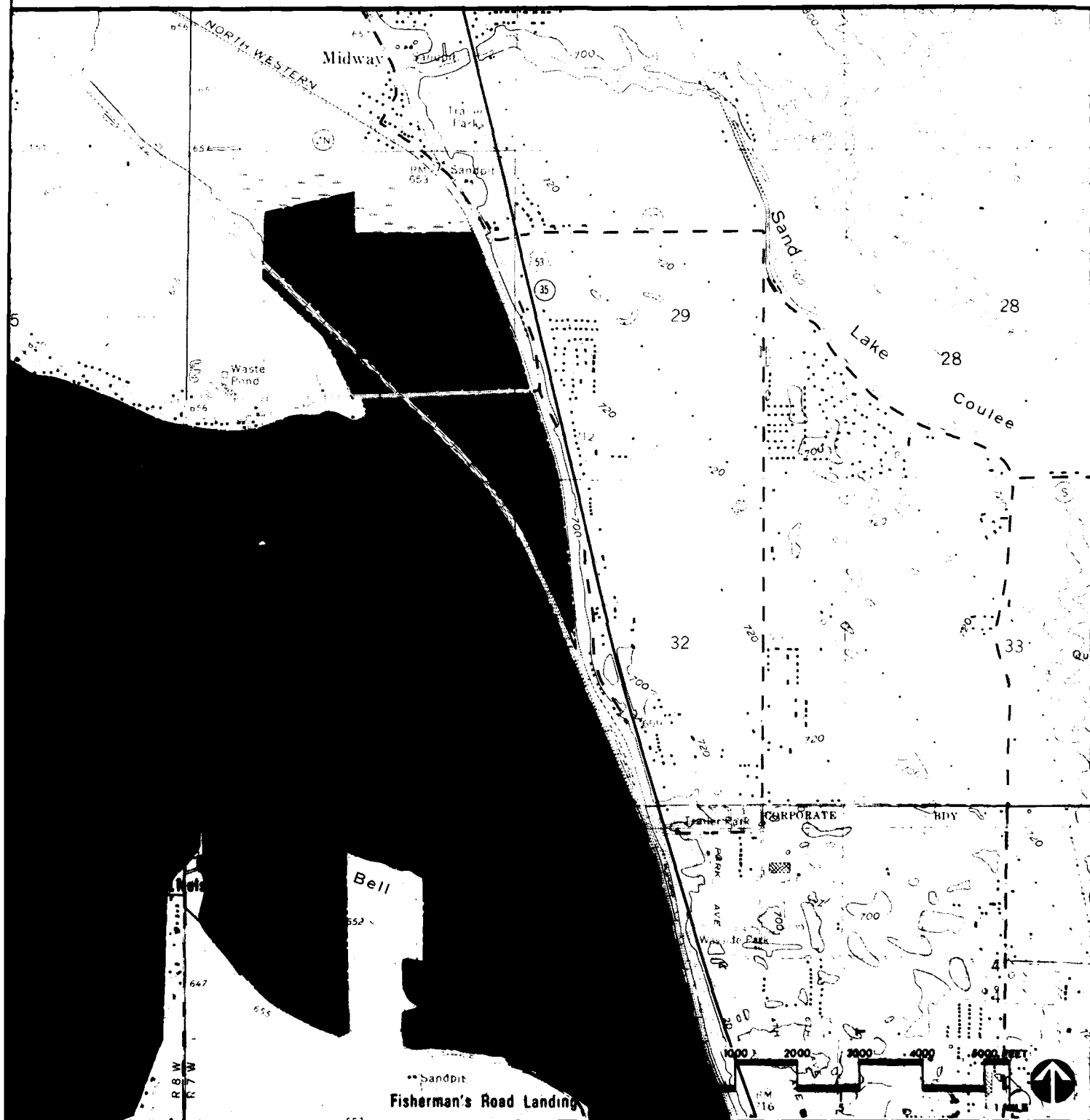


Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River

Legend		LAND USE ALLOCATIONS*
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
--- FWS Refuge Boundary
+ Miles Above Ohio River
* See text Section 5C for definitions of land use allocation categories

US Army Corps
of Engineers



— State Boundary
 — FWS Refuge Boundary
 — Miles Above Ohio River
 Section 50 for definitions
 use allocation categories



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 Checked by: *Russell K. Simpson*
 Submitted by: *Jim Hill*
 Approved by: *Charles E. Wakeman*

Land Use Allocation
 Pool 7 Lake Onalaska Plate 41 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



State Boundary
FWS Refuge Boundary
Miles Above Ohio River
tion 50 for definitions
location categories



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of Engineers

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Checked by: *Russell K. Smyke*

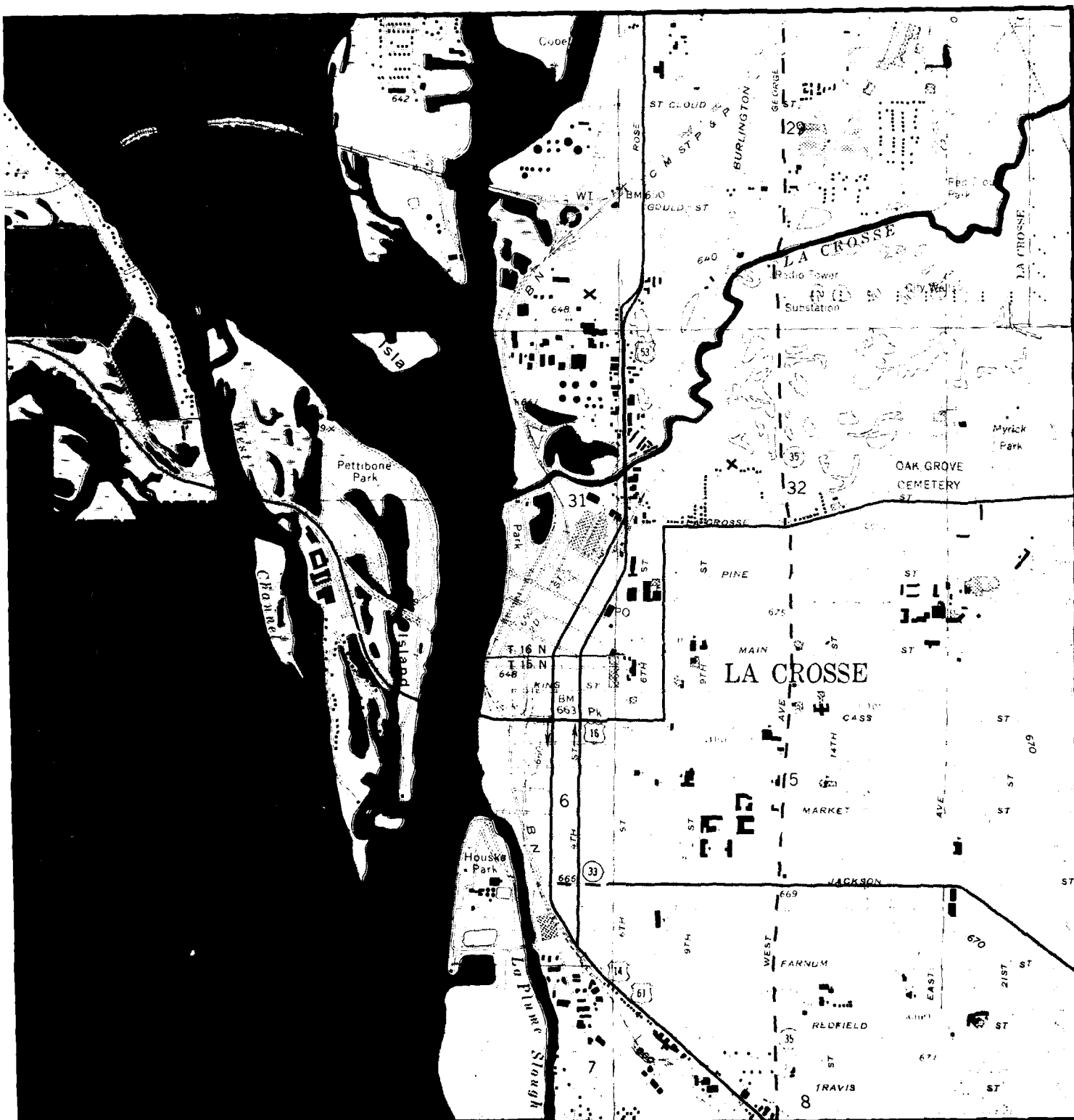
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Approved by: *Charles E. Winkler*

Land Use Allocation

L & D 7 Mile 700.2-703.9 Plate 42 of 66





State Boundary
 FWS Refuge Boundary
 Miles Above Ohio River
 tion 50 for definitions
 location categories



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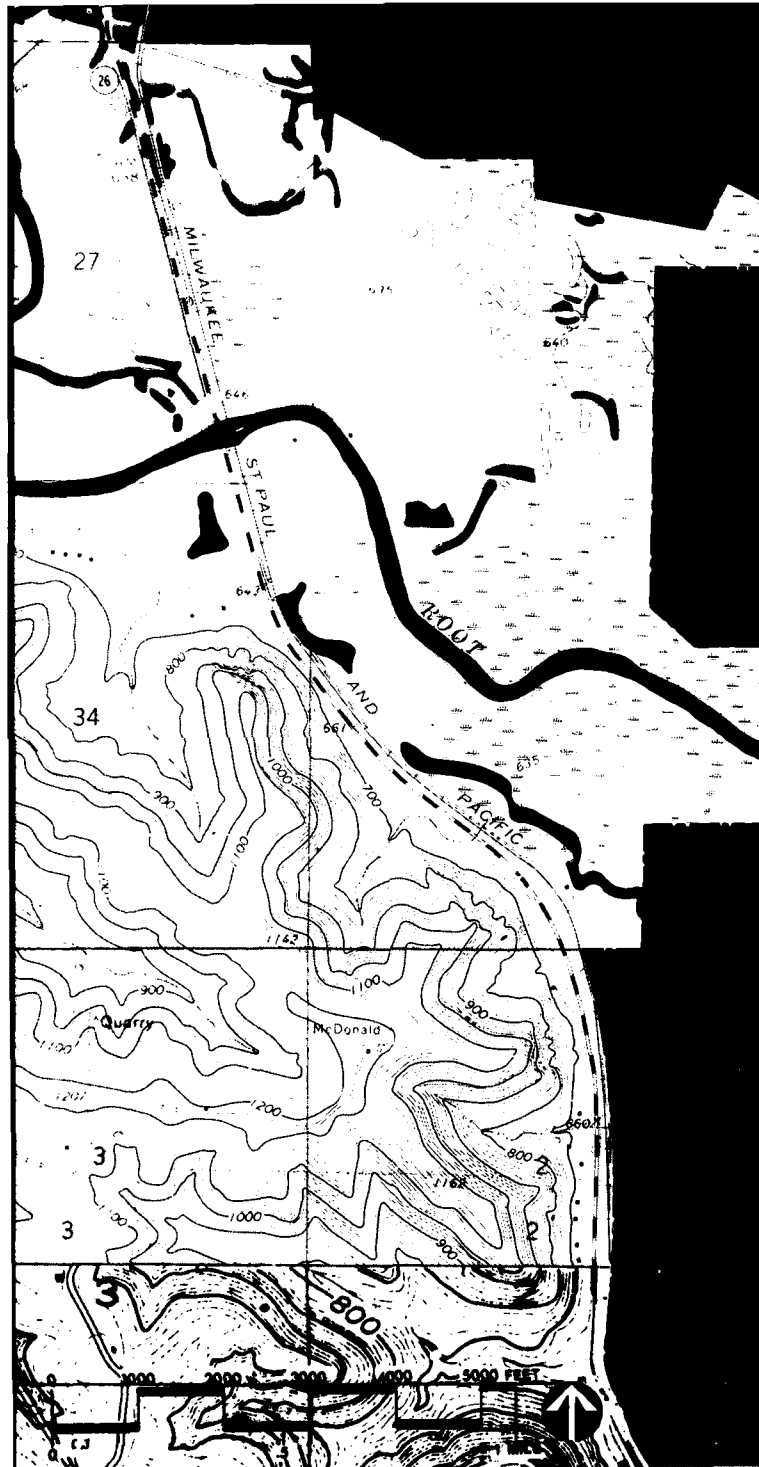
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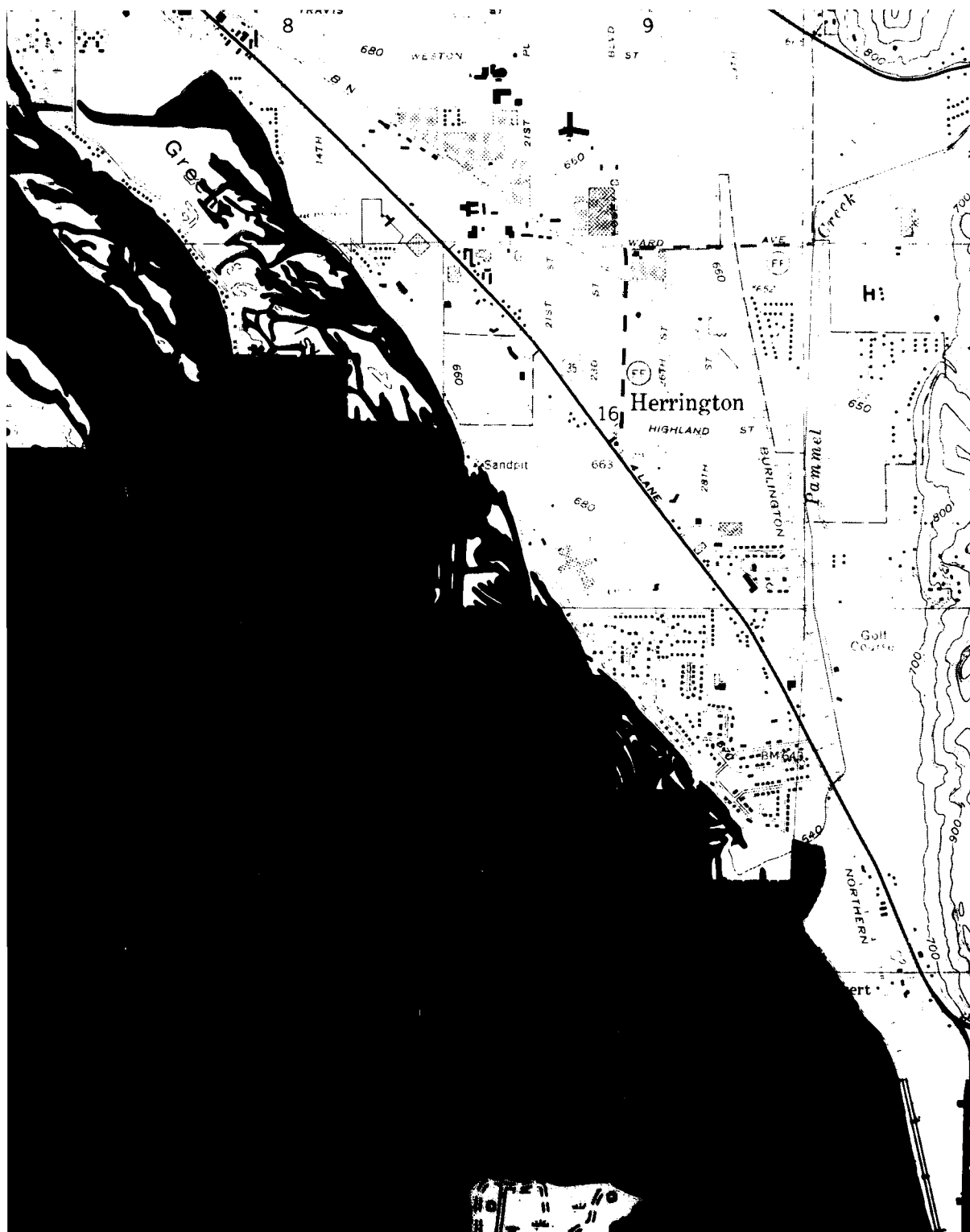
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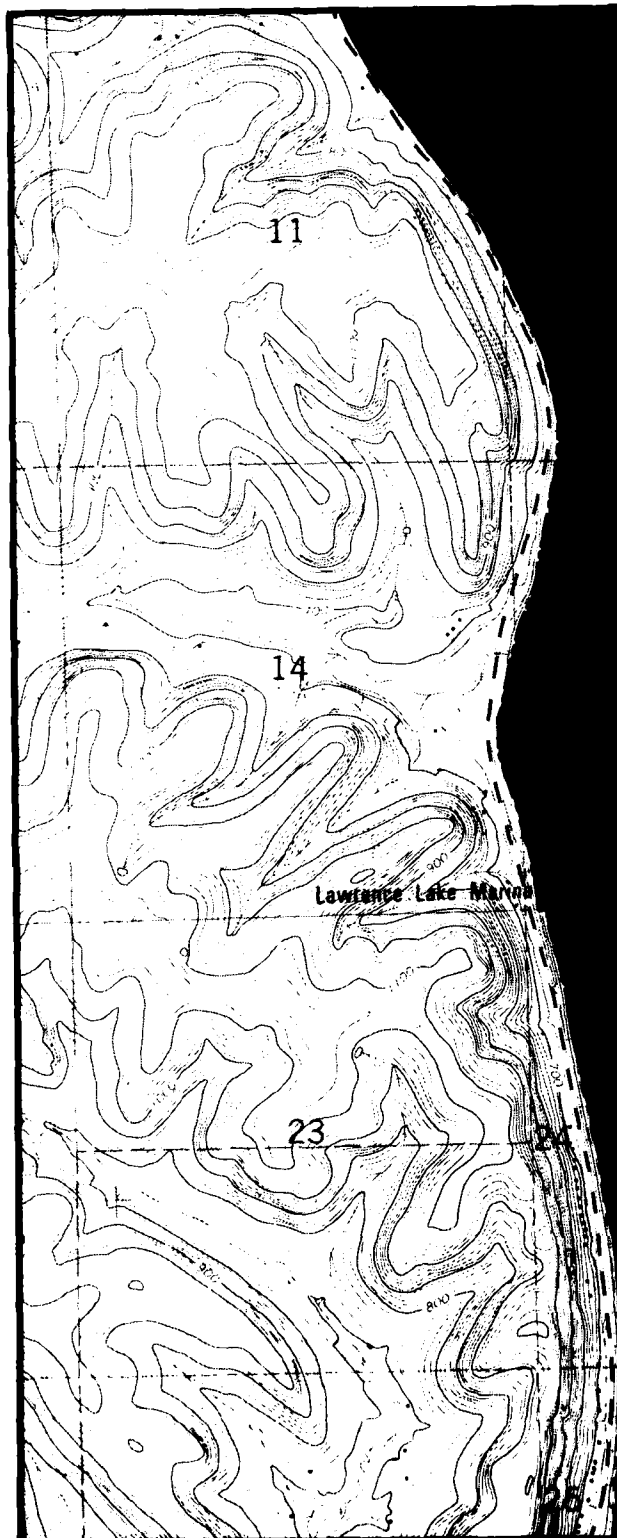
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Land Use Allocation

Pool 8 Mile 696.2-700.4 Plate 43 of 66







Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

----- State Boundary
 ----- FWS Refuge Boundary
 + 8890 Miles Above Ohio River
 + 728

* See text Section 50 for definitions
of land use allocation categories



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State Boundary
WS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
Location categories



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Checked by: *Russell K. Sample*

Submitted by: *Jim Hill*

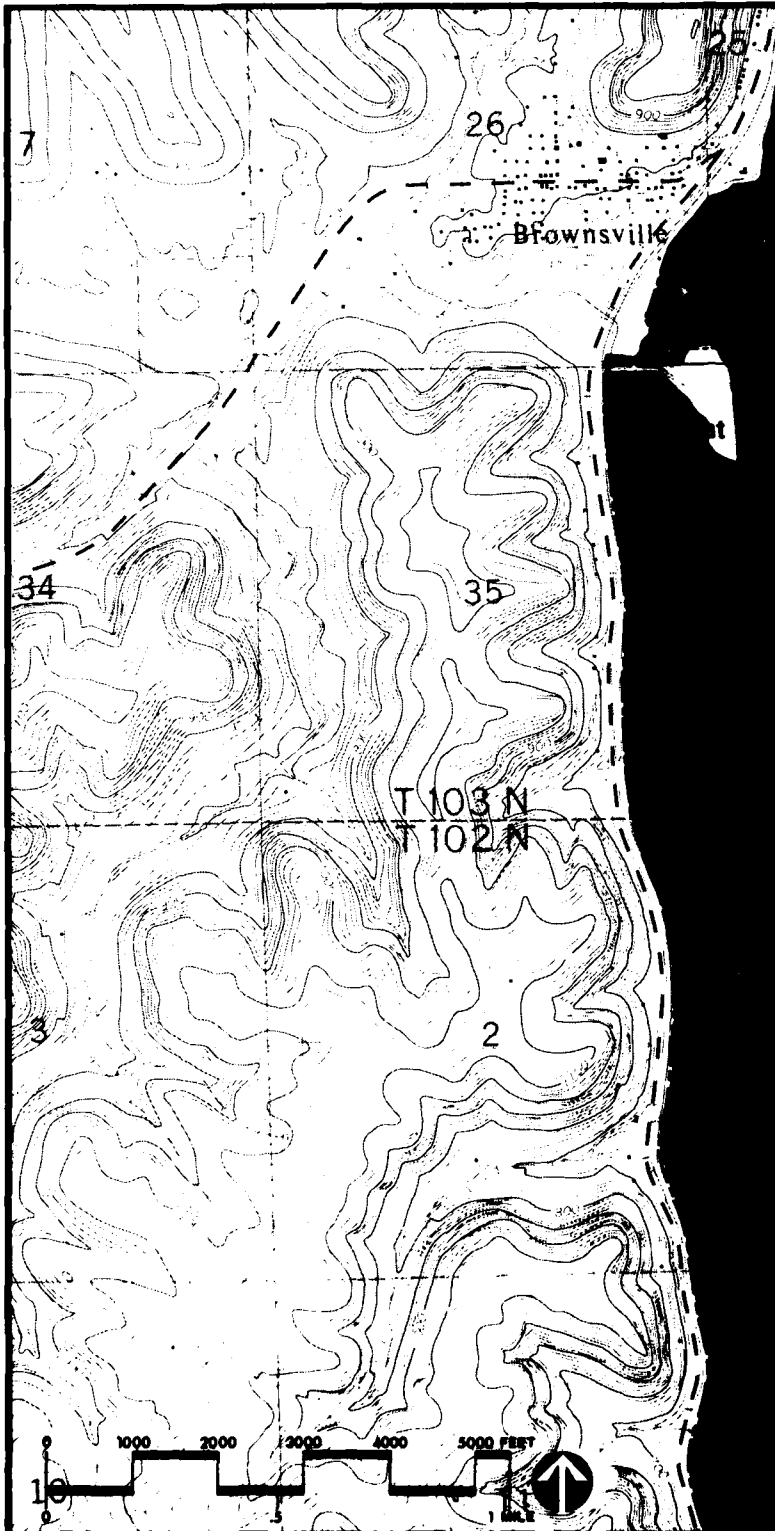
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Land Use Allocation

Pool 8

Mile 689.2-692.8

Plate 45 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

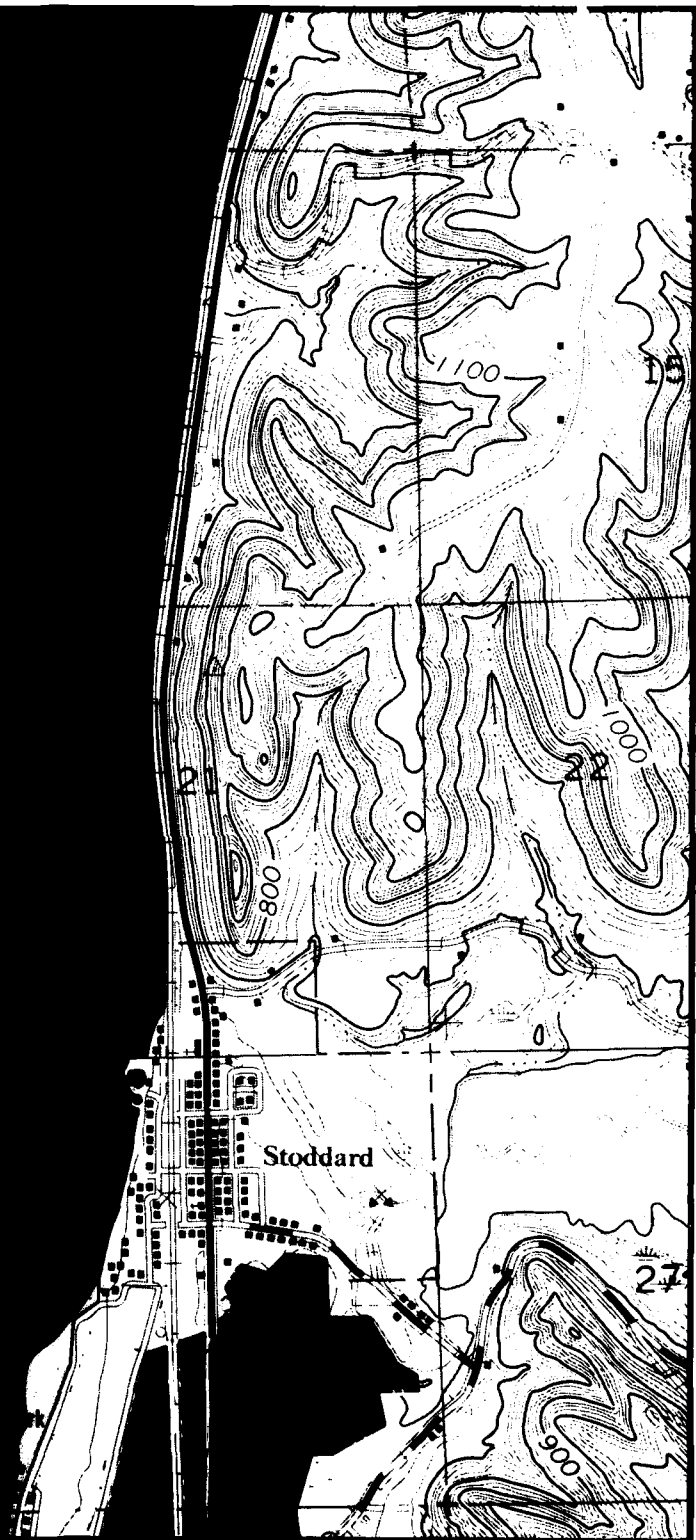
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile
 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



State Boundary
WS Refuge Boundary
Miles Above Ohio River
on 5.0 for definitions
location categories



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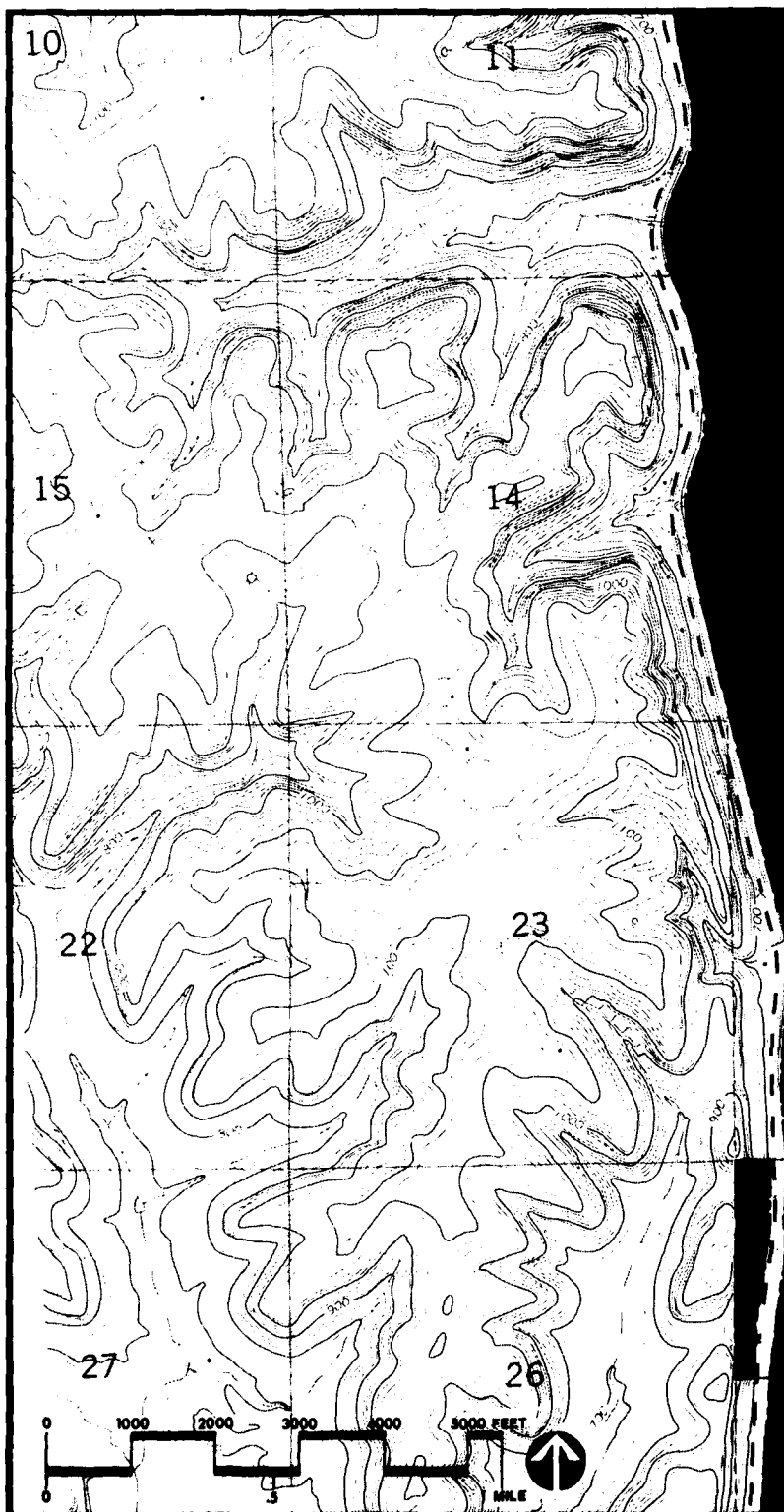
Checked by: *Russell K. Snyder*

Submitted by: *Ken Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 8 Mile 685.6-689.4 Plate 46 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

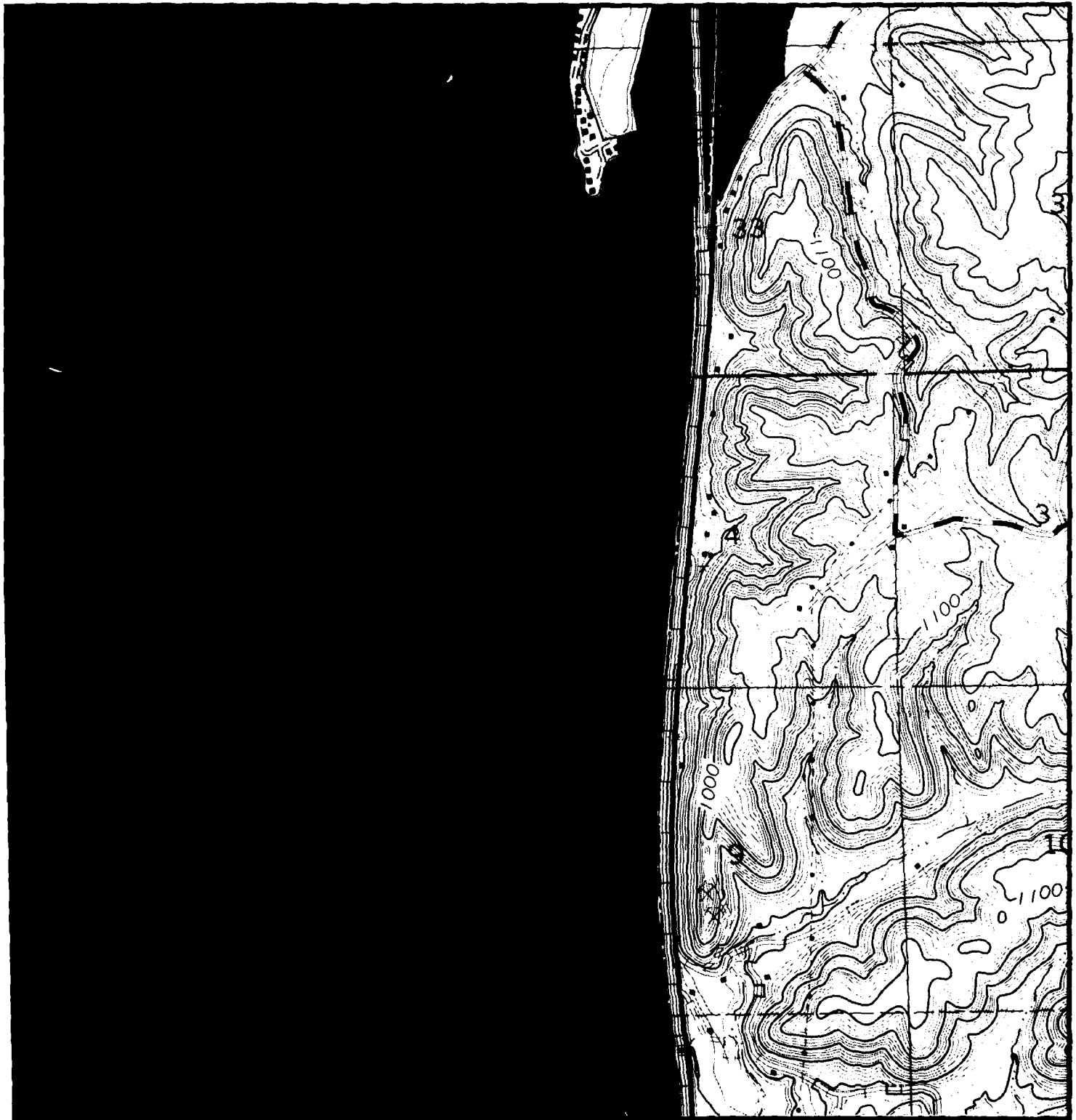
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



ate Boundary
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 cation categories



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Drawn by: *BV/RS/L.N.*

Checked by: *Russell K. Soper*

Submitted by: *Kim Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 8 Mile 681.7-685.4 Plate 47 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

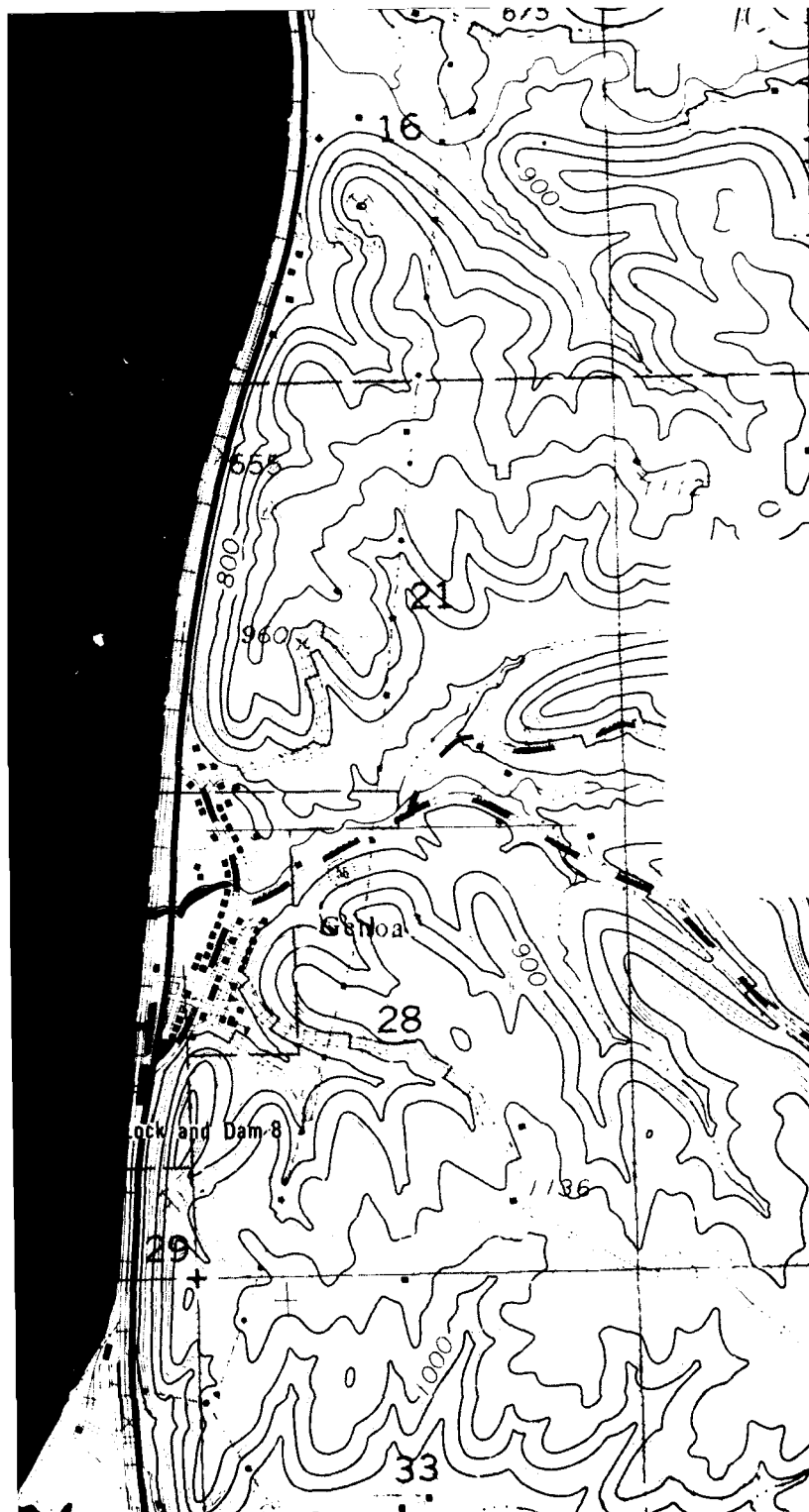
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

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 --- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



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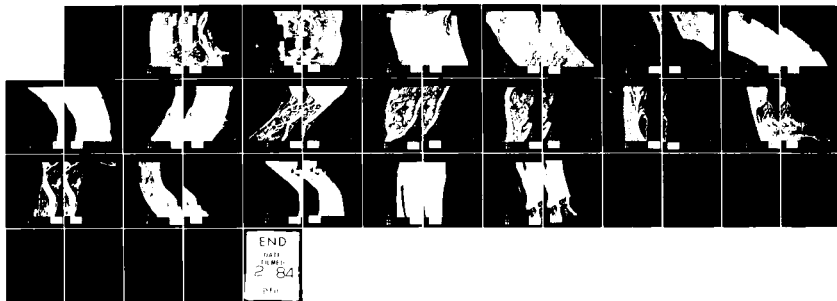
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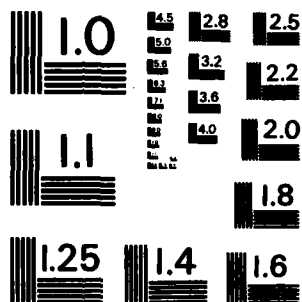
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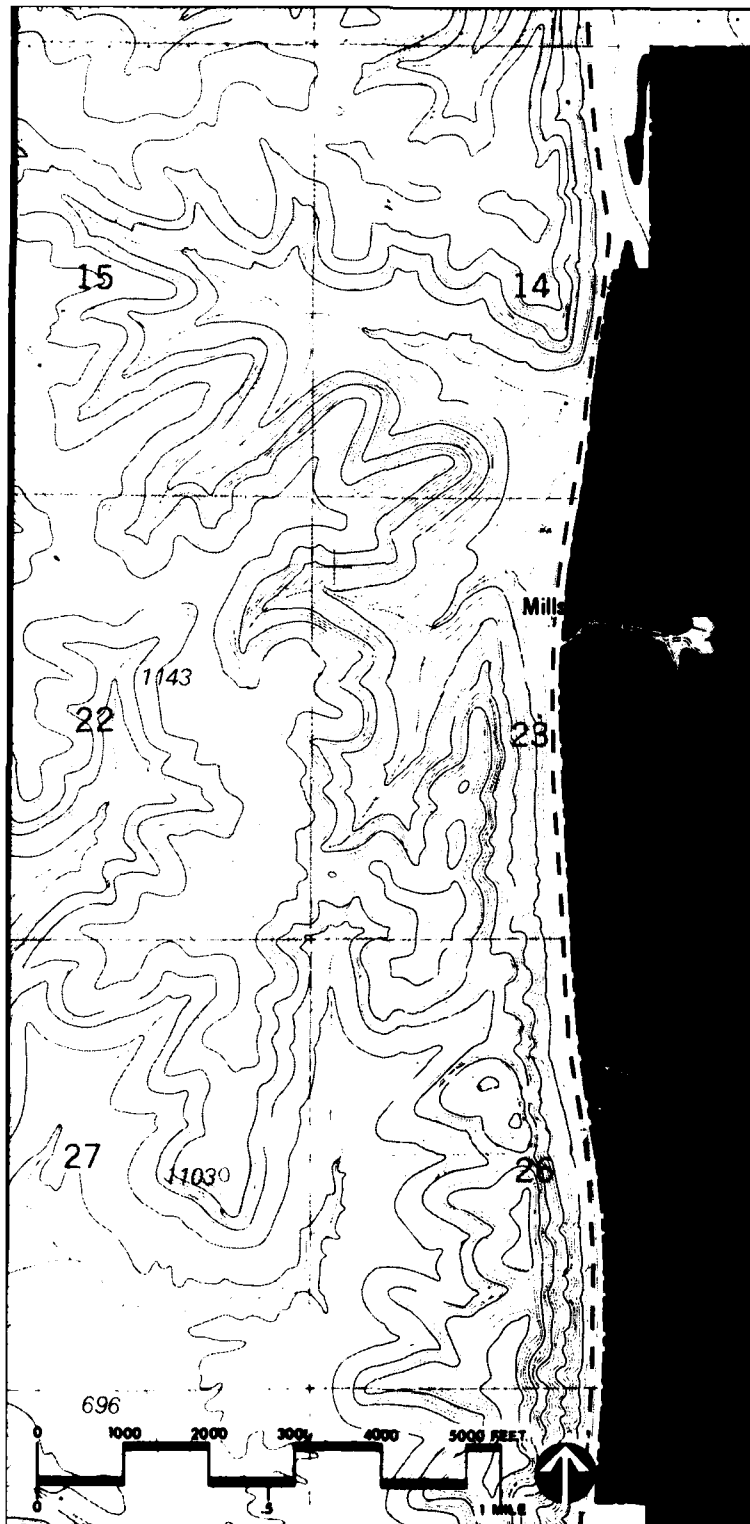
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State Boundary
 WWS Refuge Boundary
 Miles Above Ohio River
 Section 50 for definitions
 location categories



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 of Engineers

Drawn by: BV/RS/L.N.

Checked by: *Russell K. Soper*

Submitted by: *Ken Hill*

Approved by: *Charles E. Warkner*

Land Use Allocation

Pool 9 Mile 674.5-678.4 Plate 49 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend

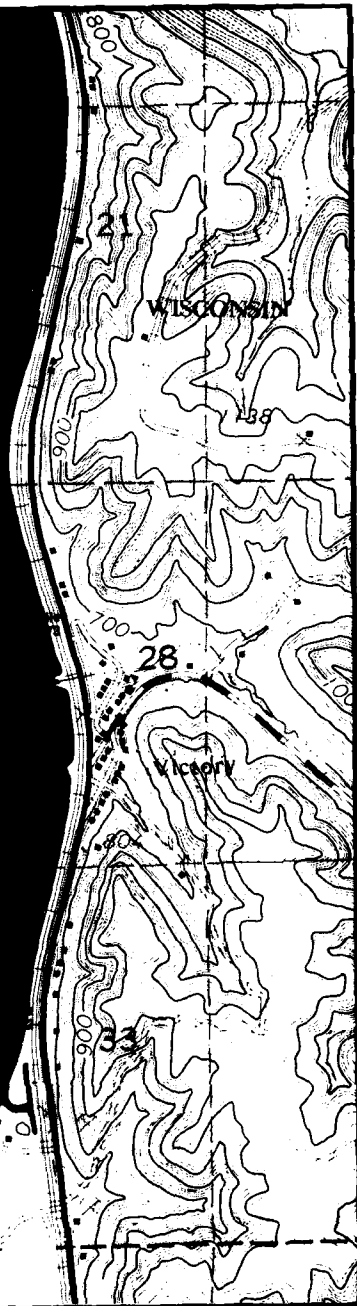
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 725 Miles Above Ohio River

* See text Section 50 for definitions of land use allocation categories



US Army Corps of Engineers

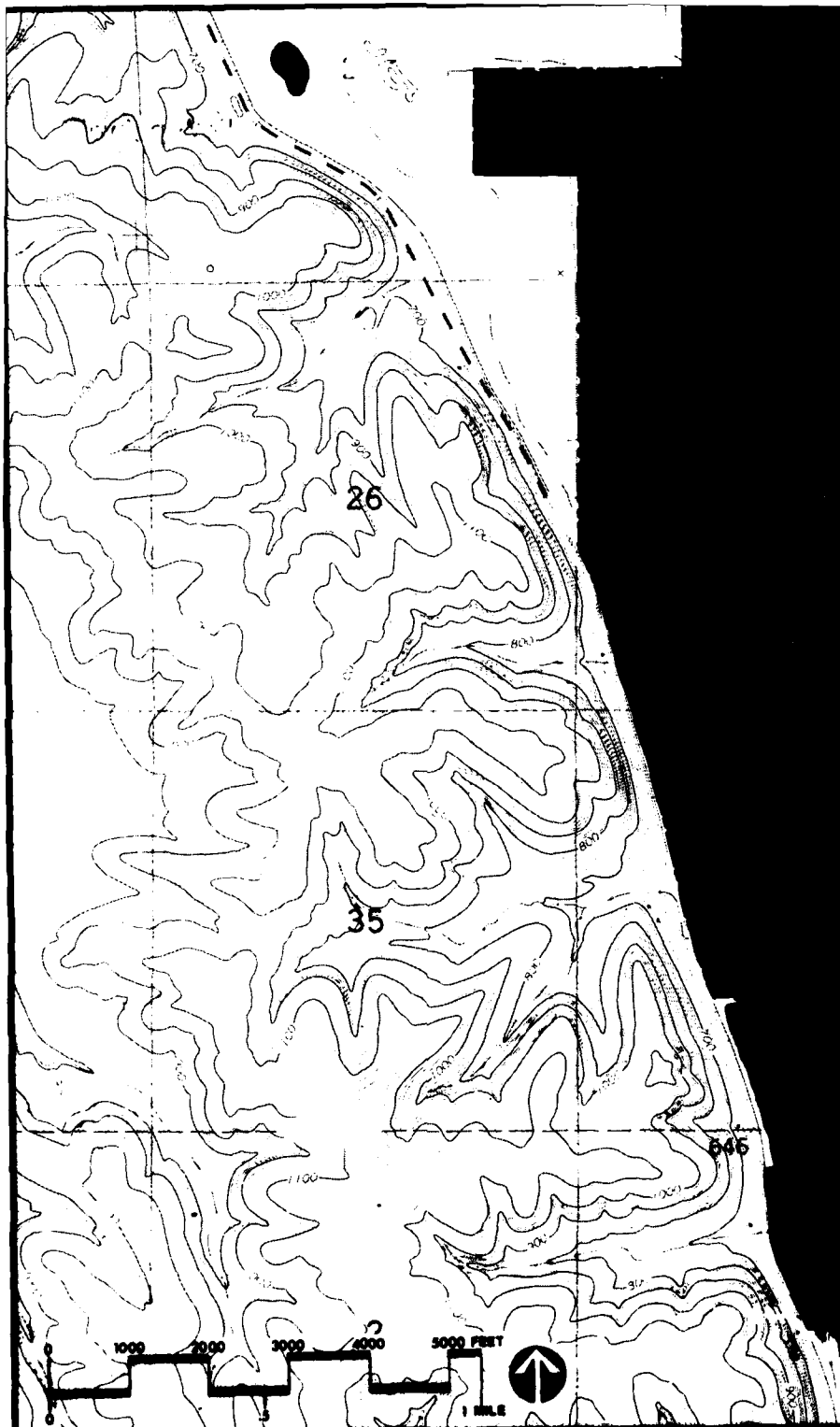


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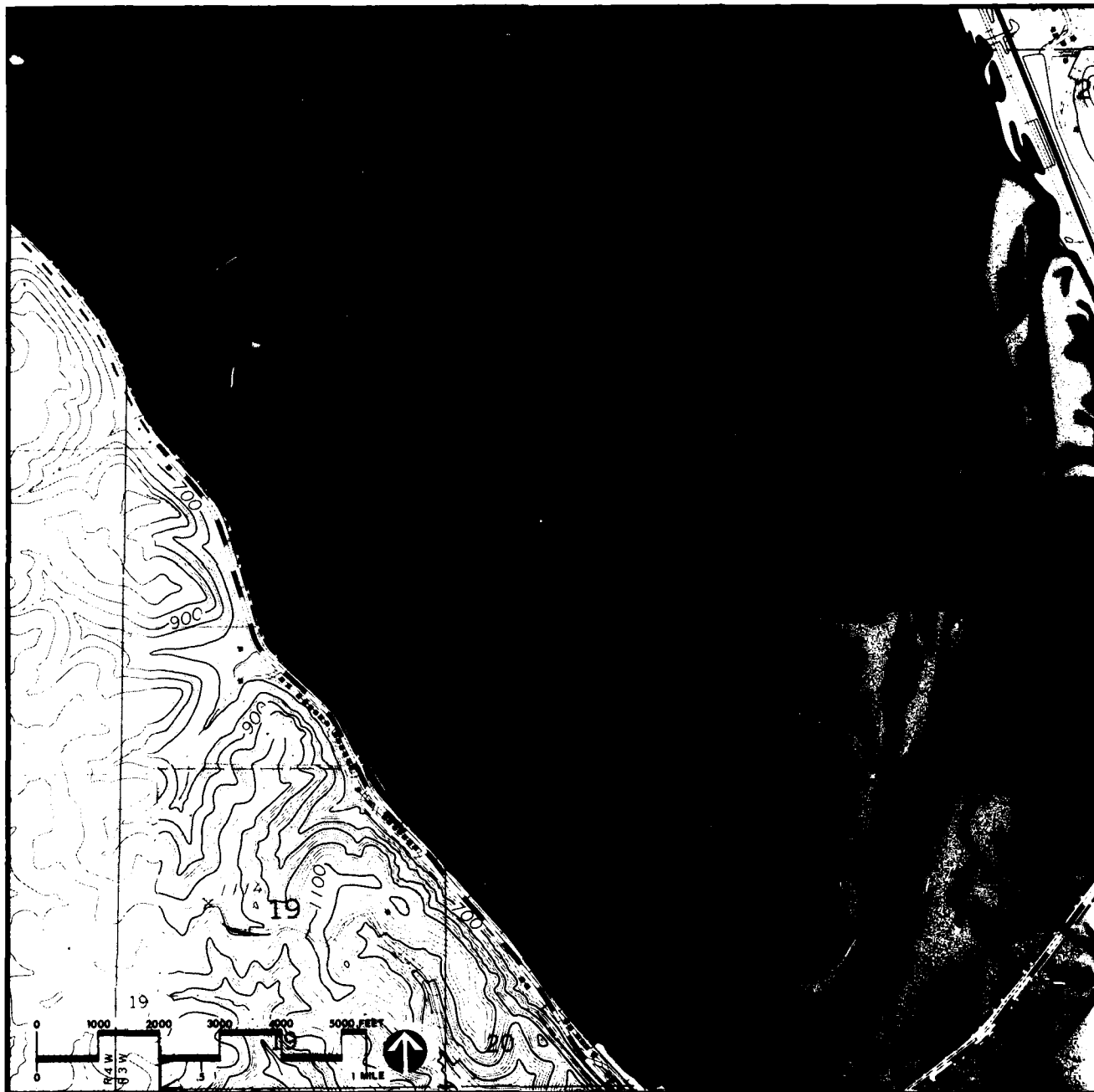


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 Submitted by: *Ken Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation
 Pool 9 Mile 671.0-674.7 Plate 50 of 66







**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 1000
 725 Miles Above Ohio River

* See text Section 5.0 for definitions of land use allocation categories

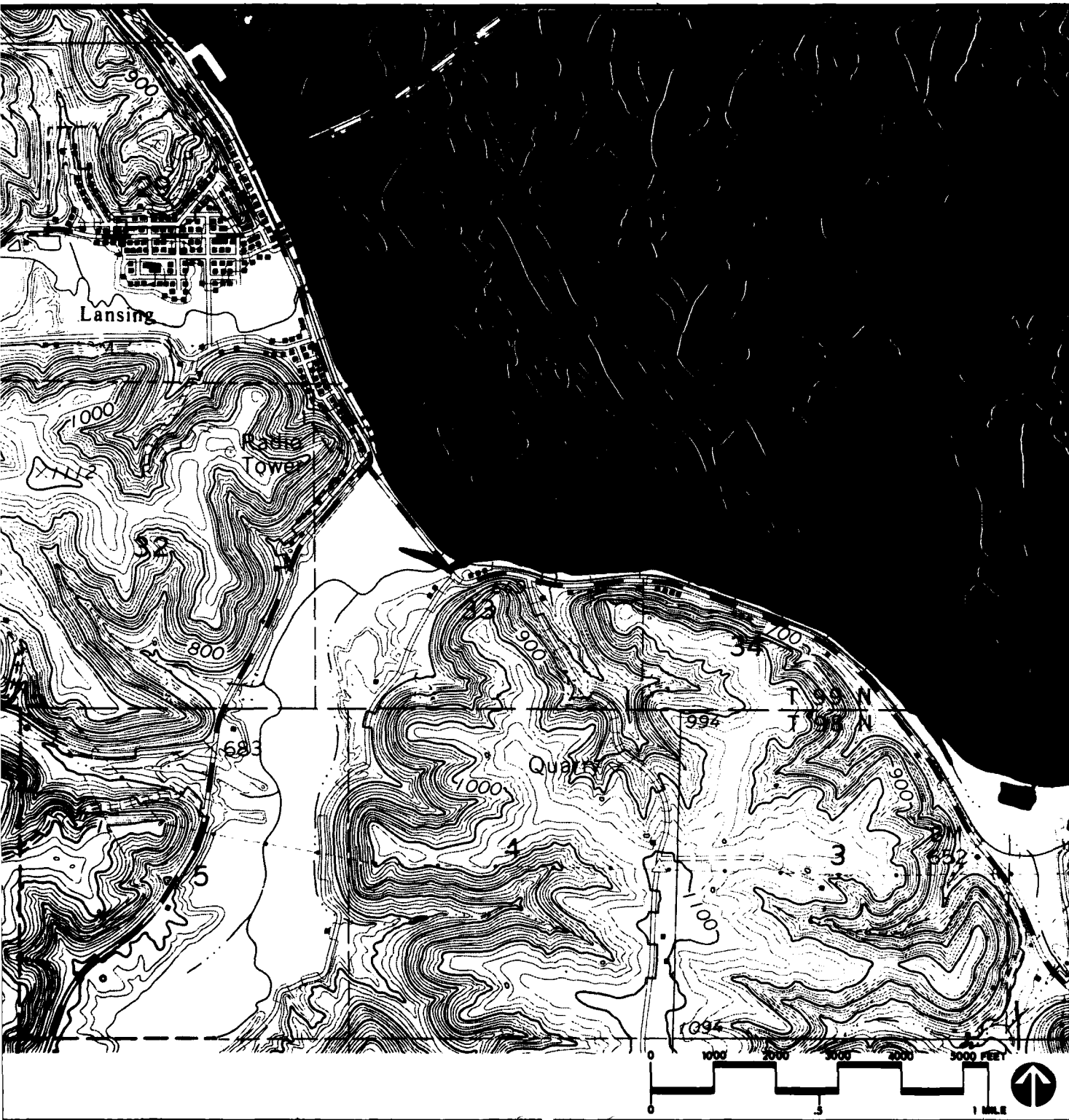


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State Boundary
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 Section 50 for definitions
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 Checked by: *Russell K. Snyder*
 Submitted by: *Ken Hill*
 Approved by: *Charles R. Winkler*

Land Use Allocation
Pool 9 Mile 659.8-663.9 Plate 53 of 66



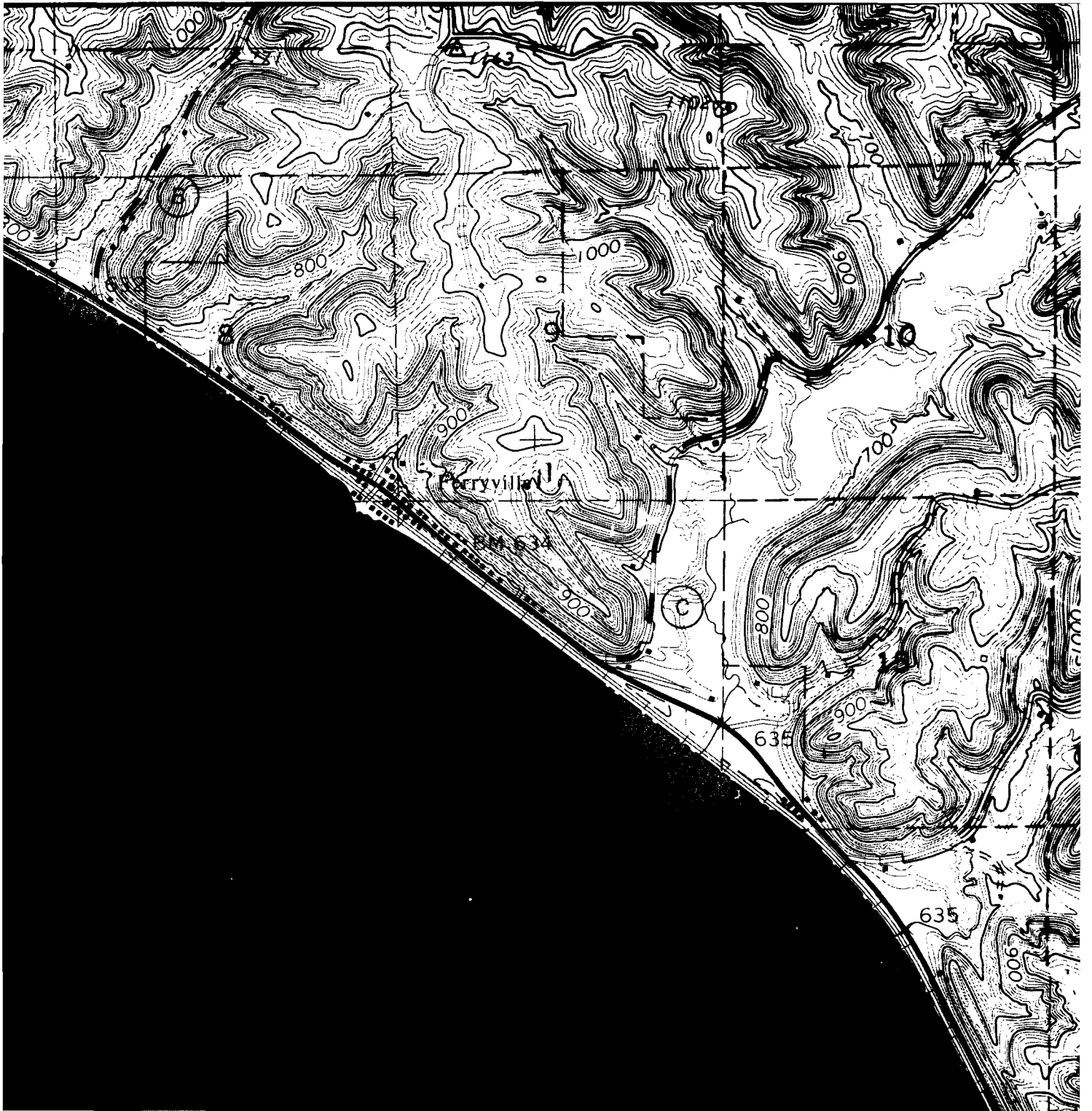
**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

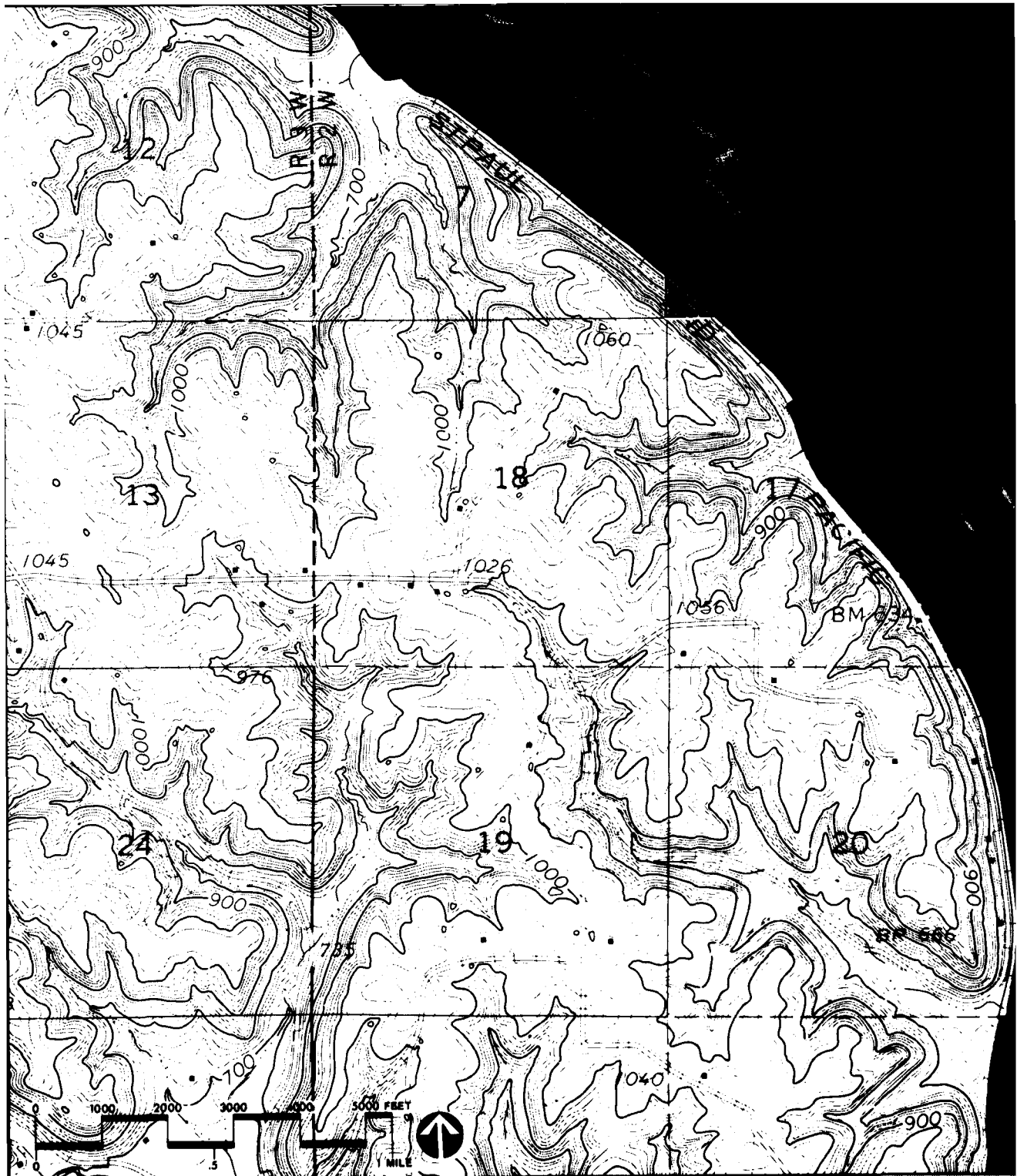
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
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 + 1886
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 * See text Section 50 for definitions
 of land use allocation categories



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State Boundary
FWS Refuge Boundary
Miles Above Ohio River
Section 50 for definitions
Allocation categories



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Checked by: *Friedrich K. Senger*

Submitted by: *Norm Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 9 Mile 653.7-657.9 Plate 55 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS *
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

----- State Boundary
 ----- FWS Refuge Boundary
 + 8800
 725 Miles Above Ohio River

* See text Section 50 for definitions
of land use allocation categories



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of Engineers



— State Boundary
— FWS Refuge Boundary
— Miles Above Ohio River

Section 5.0 for definitions
use allocation categories



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of Engineers

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Checked by: *Russell K. Sengler*

Submitted by: *N. Hill*

Approved by: *Charles E. Wankner*

Land Use Allocation

Pool 9 Mile 649.7-653.9 Plate 56 of 66





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Drawn by: BV/RS/KN

Checked by: *Russell K. Sogabe*

Submitted by: *Ken Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

L & D 9 Mile 645.4-649.9 Plate 57 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

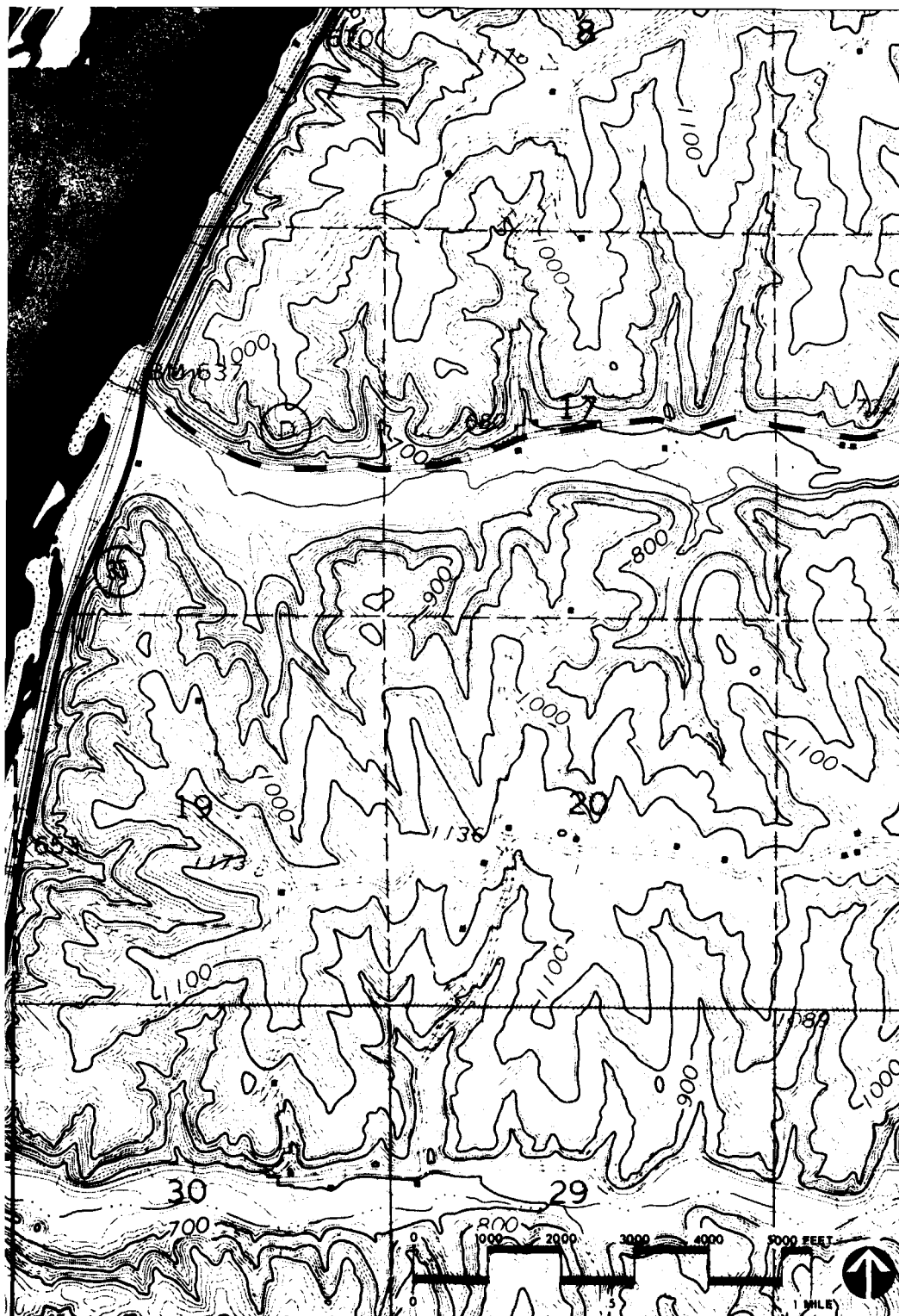
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[Pattern]	[Pattern]	Project Operations
[Pattern]	[Pattern]	Recreation / Intensive Use
[Pattern]	[Pattern]	Recreation / Low-Density
[Pattern]	[Pattern]	Natural Area
[Pattern]	[Pattern]	Wildlife Management

----- State Boundary
 ----- FWS Refuge Boundary
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 Miles Above Ohio River
 * See text Section 50 for definitions
 of land use allocation categories



U.S. Army Corps of Engineers
 Vicksburg, Mississippi





Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

CORPS LANDS	FWS LANDS	LAND USE ALLOCATIONS*
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + 1000
 725 Miles Above Ohio River

* See text Section 50 for definitions
 of land use allocation categories



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Drawn by: *BV/RS/KN*
 Checked by: *Russell K. Smyke*
 Submitted by: *Tom Hill*
 Approved by: *Charles E. Winkler*

Land Use Allocation
 Pool 10 Mile 637.7-641.2 Plate 59 of 66

2

Resource Management Upper Mississippi River

Recreation / Low-Density
Natural Area
Wildlife Management

Miles Above Ohio River
+ 725
See text Section 50 for definitions
of land use allocation categories

US Army Corps
of Engineers



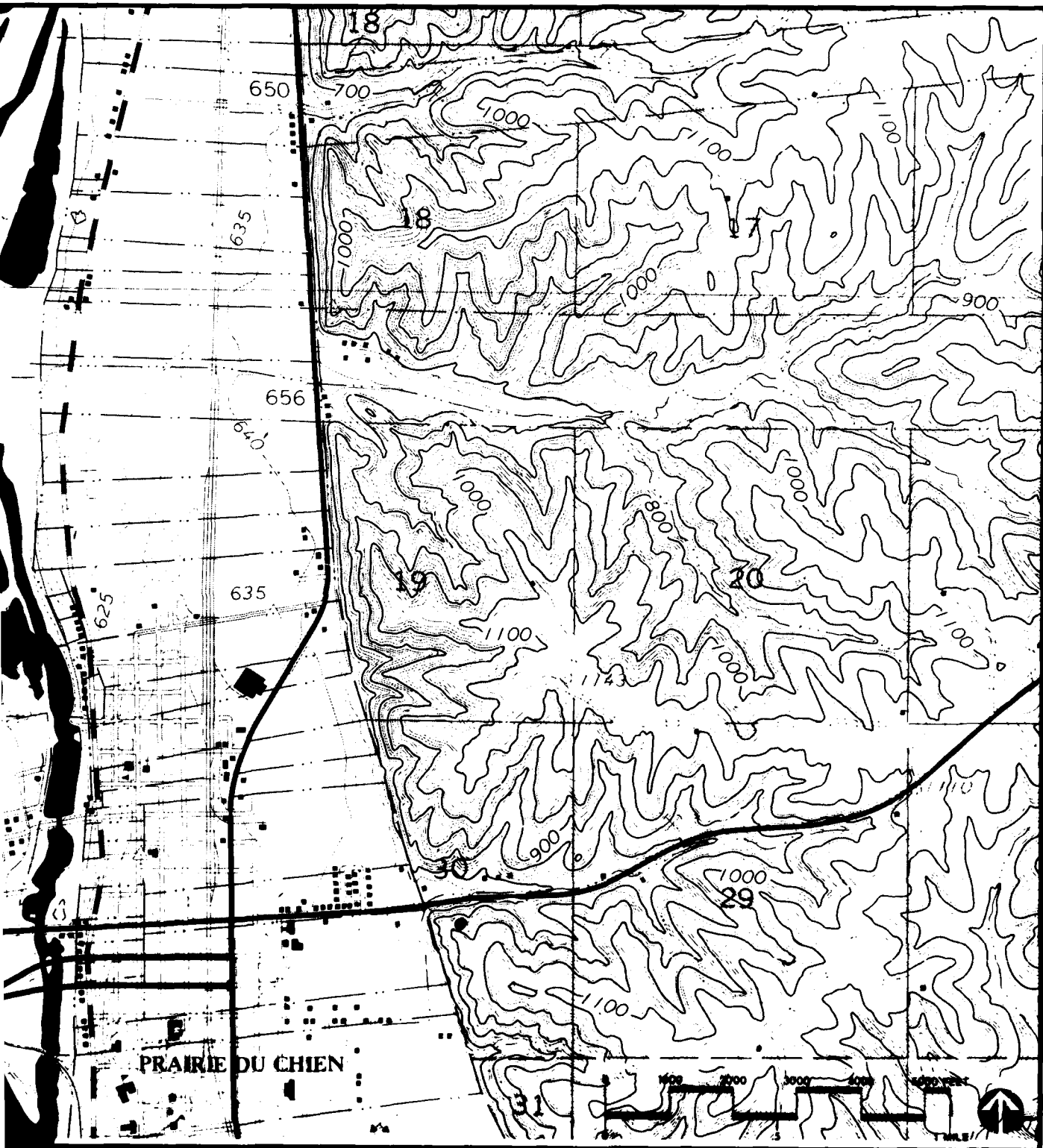
Master Plan for Public Use Development and Resource Management Upper Mississippi River

Legend
CORPS FWS
LANDS LANDS LAND USE ALLOCATIONS*
Project Operations
Recreation / Intensive Use
Recreation / Low-Density
Natural Area
Wildlife Management

State Boundary
FWS Refuge Boundary
+ 725
Miles Above Ohio River
* See text Section 50 for definitions
of land use allocation categories



US Army Corps
of Engineers



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definitions
categories



Drawn by *EV/RS/LN*

Checked by *Russell K. Engle*

Submitted by *Ken Hill*

Approved by *Charles E. Wagoner*

Land Use Allocation

Pool 10 Mile 634.4-637.9 Plate 60 of 66



**Master Plan for Public
Use Development and
Resource Management
Upper Mississippi River**

Legend		LAND USE ALLOCATIONS*
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile 725 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



US Army Corps
of Engineers



Boundary
Refuge Boundary
Above Ohio River
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on categories



Drawn by: BV/RS/LN.
Checked by: *Russell K. Soper*
Submitted by: *Thom Hill*
Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 10 Mile 631.0-634.6 Plate 61 of 66



Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend

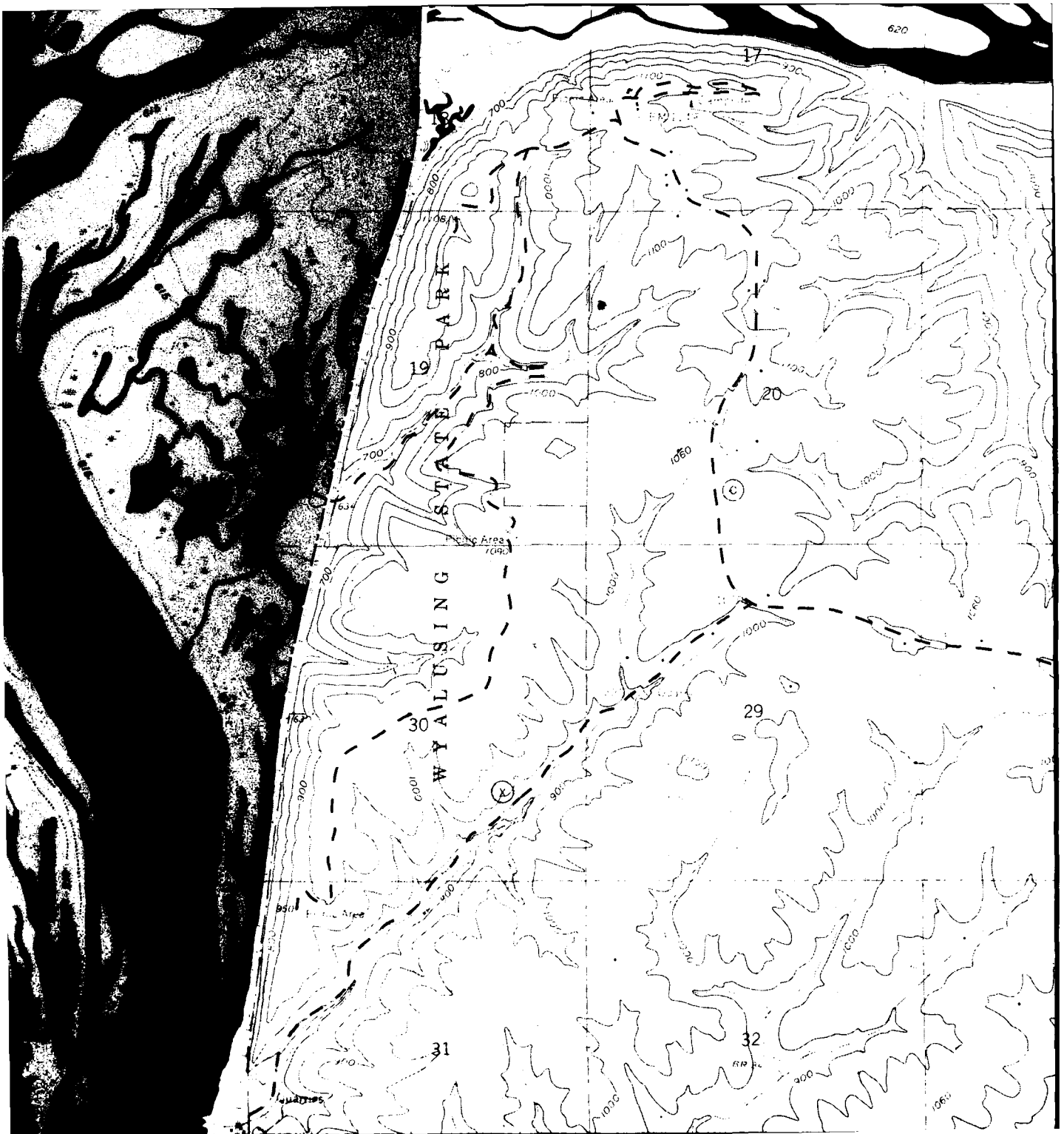
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		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 Mile
 + 728 Miles Above Ohio River

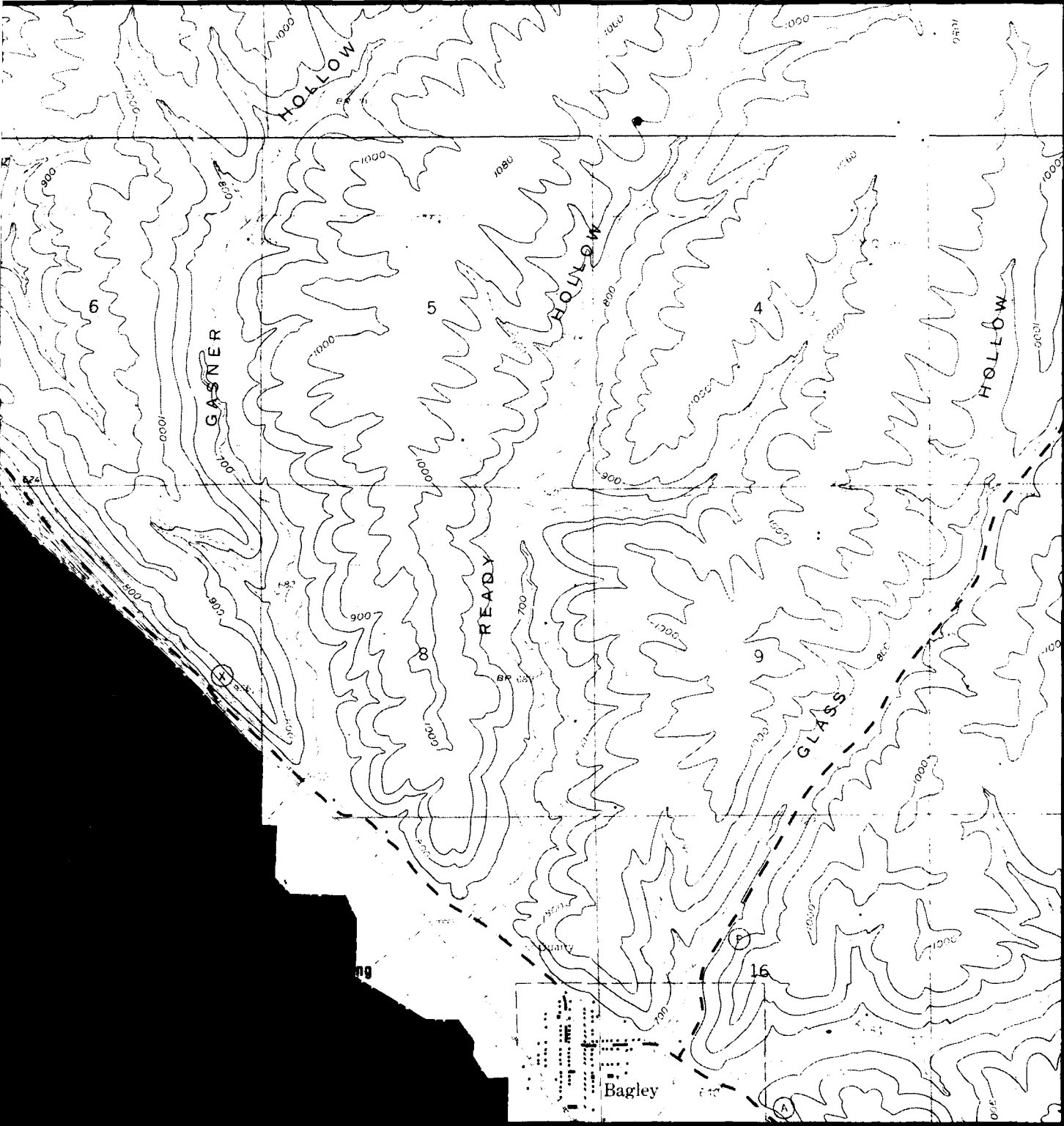
* See text Section 50 for definitions of land use allocation categories



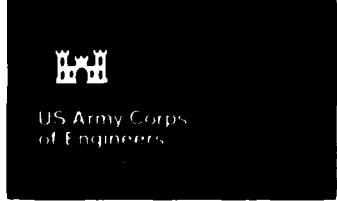
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of Engineers





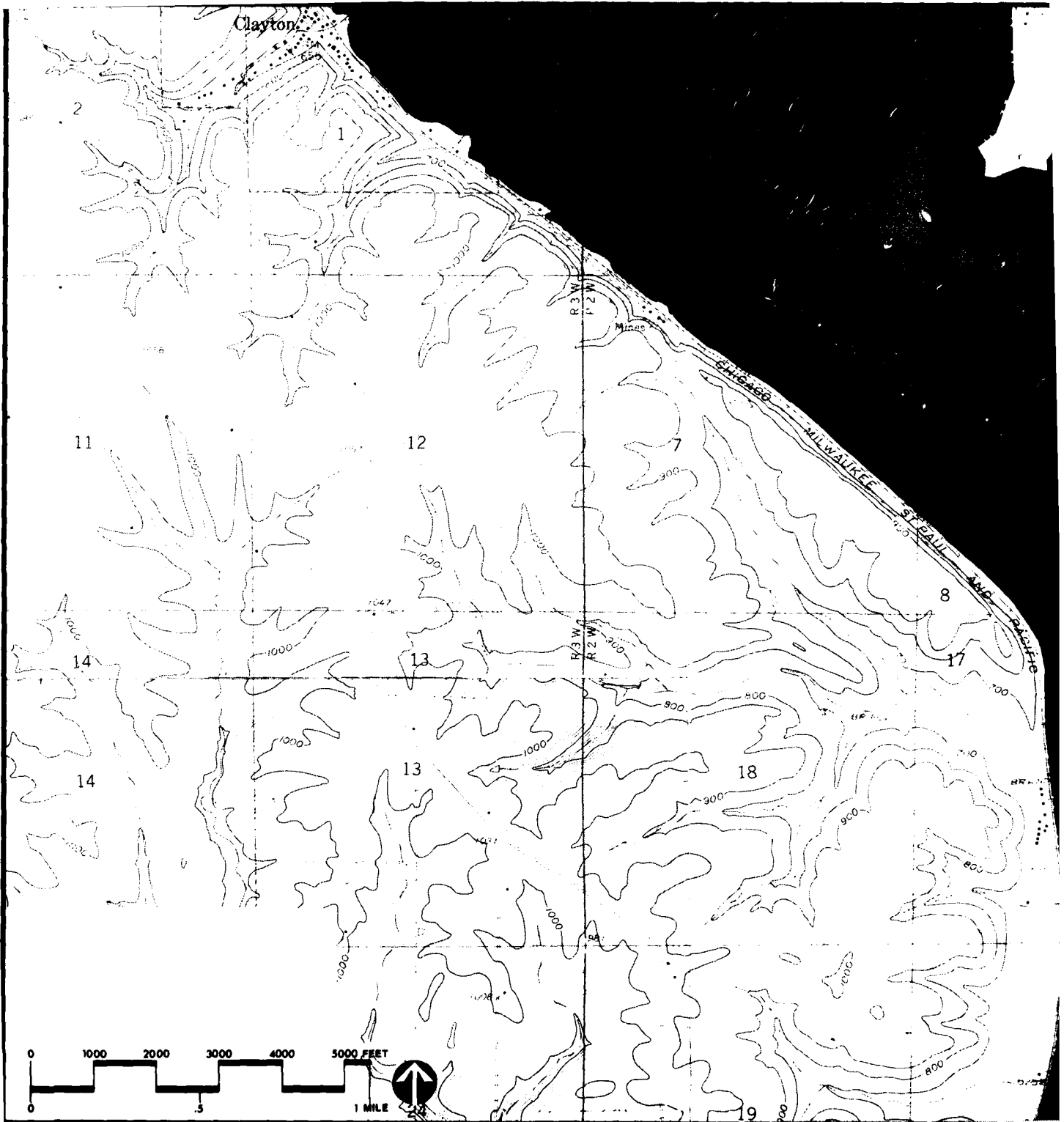


State Boundary
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 Submitted by: *Norm Hill*
 Approved by: *Charles E. Watson*

Land Use Allocation
 Pool 10 Mile 624.5-628.0 Plate 63 of 66







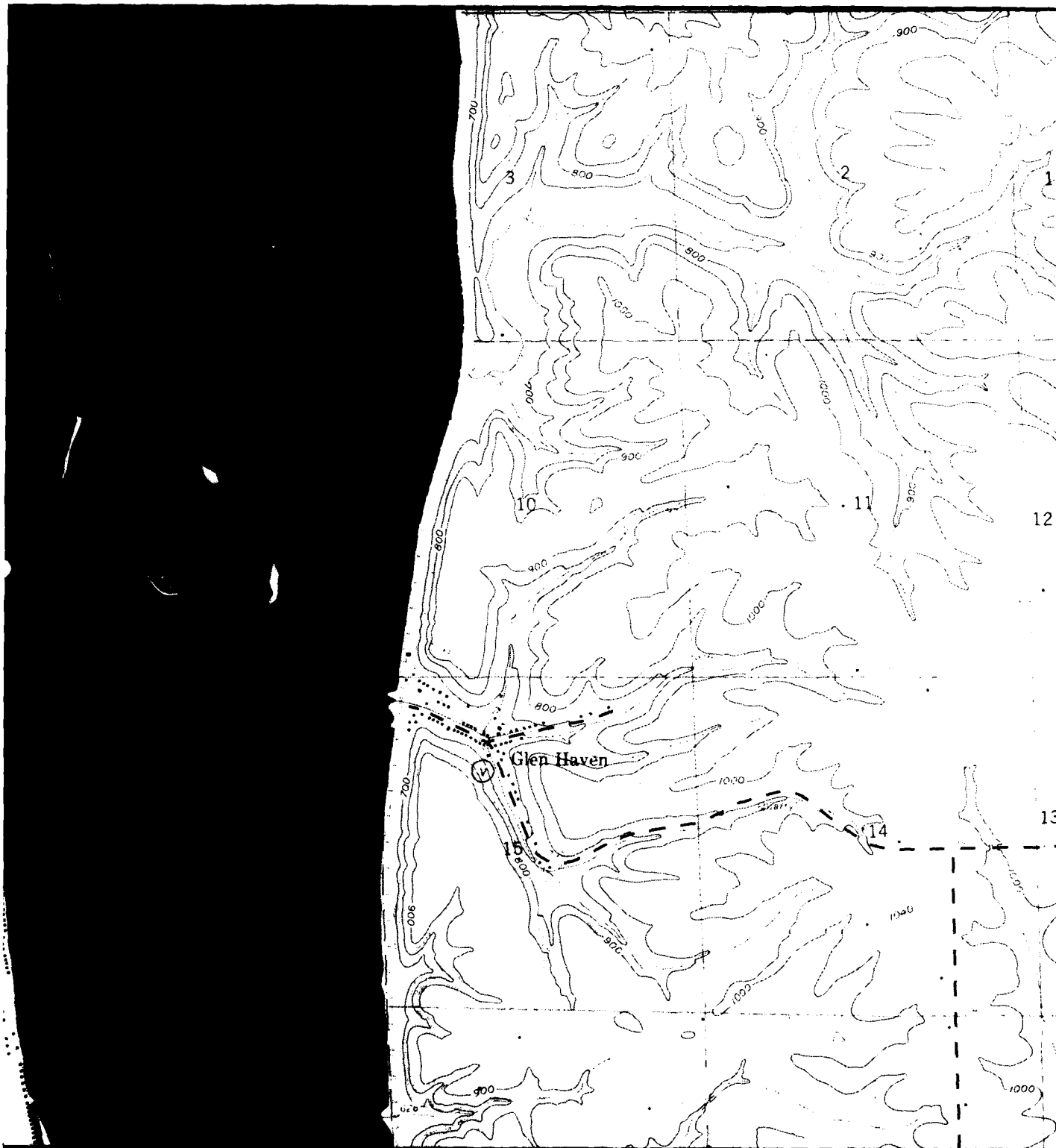
Master Plan for Public Use Development and Resource Management **Upper Mississippi River**

Legend		LAND USE ALLOCATIONS*
CORPS LANDS	FWS LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 * Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



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Boundary
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Above Ohio River



U.S. Army Corps of Engineers
District of Columbia

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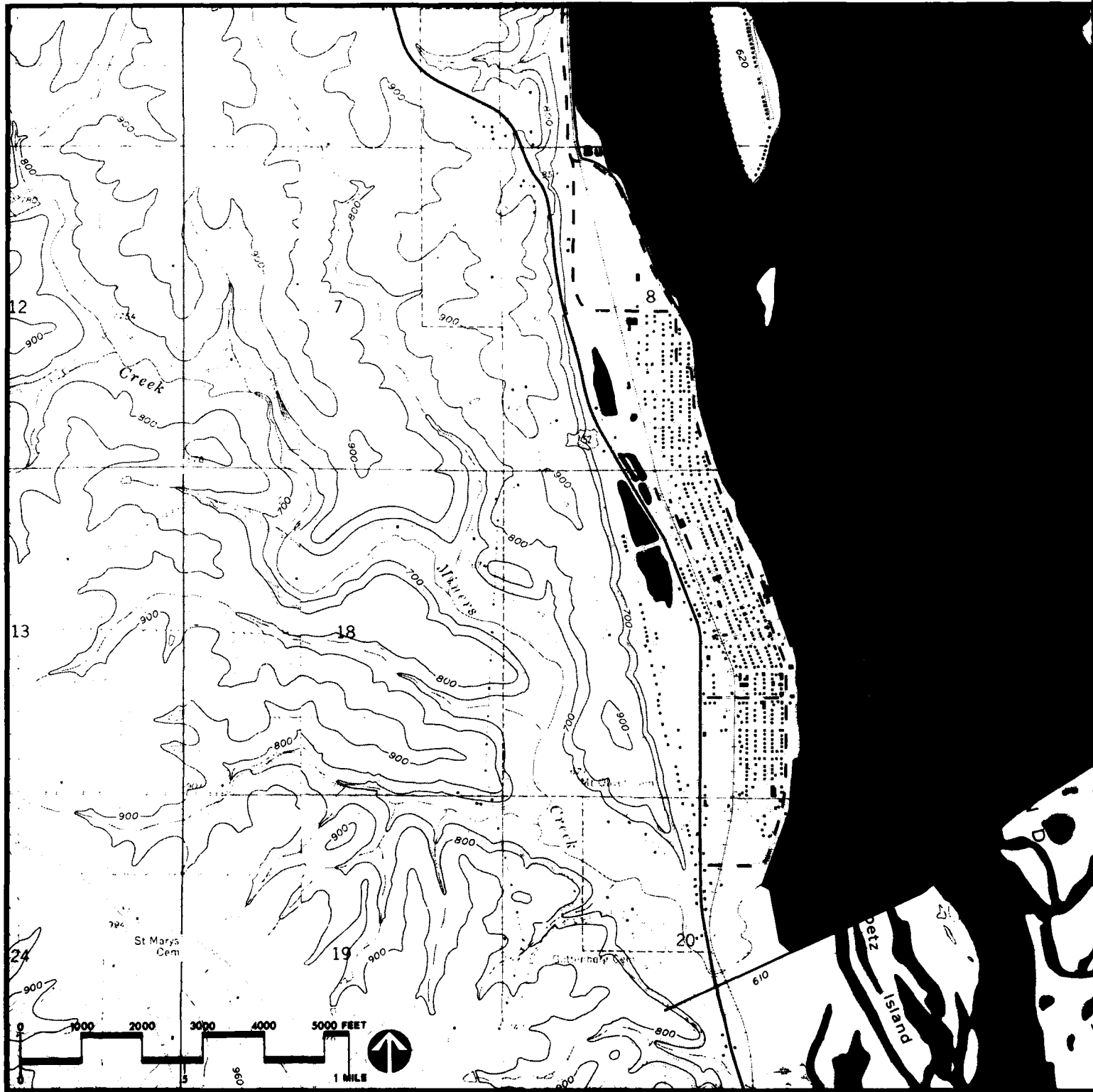
Checked by: *Russell K. Sogler*

Submitted by: *Tom Hill*

Approved by: *Charles E. Winkler*

Land Use Allocation

Pool 10 Mile 616.8-620.5 Plate 65 of 66



Master Plan for Public Use Development and Resource Management Upper Mississippi River

CORPS FWS		LAND USE ALLOCATIONS *
LANDS	LANDS	
		Project Operations
		Recreation / Intensive Use
		Recreation / Low-Density
		Natural Area
		Wildlife Management

--- State Boundary
 --- FWS Refuge Boundary
 + Mile
 725 Miles Above Ohio River
 * See text Section 50 for definitions of land use allocation categories



U.S. Army Corps of Engineers
Mississippi River Division

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U.S. Army Corps of Engineers

Drawn by: B.V./RS/K.N.

Checked by: Russell K. Sogler

Submitted by: H. Hill

Approved by: Charles E. Wokosin

Land Use Allocation

L & D 10 Mile 613-617.0 Plate 66 of 66

GLOSSARY

Bold letters in a definition indicate that term is also defined in this glossary.

activity occasion - A recreation planning term usually defined as a single person undertaking a single recreation activity for all or a reasonable part of a single day. A person may engage in more than one activity during that day and thereby generate more than one activity occasion. For example, a person who fishes during an afternoon accounts for one fishing activity occasion, while a person who goes on a picnic that includes swimming would account for a picnicking activity occasion plus a swimming activity occasion. Activity occasion estimates are used to determine the number/size of facilities that should be provided.

average pool elevation - The mean or average elevation of the pool surface above mean sea level. Since water flows downriver, the upper end of a pool will ordinarily be the high point, with the elevation declining toward the lower end.

backwater - A general term for lakes, ponds, sloughs, and other aquatic habitats lying off the main **channel** of a river. Usual backwater characteristics include shallowness, a lack of current, and, in many instances, profuse growth of aquatic vegetation.

carrying capacity - The maximum population size of a given species or group in an area, beyond which no significant increase is possible without damage to the area.

channel - (1) The deeper portion of a body of water, especially the portion used for navigation, which may be dredged to maintain appropriate depths. Also see **9-foot navigation channel**. (2) A streambed or riverbed; a river may form more than one natural channel.

closed areas - Defined areas within the refuge that are closed to specific activities during certain times of the year.

closing dam - A structure, usually of rock and brush, designed to close off side channels, sloughs, and **backwaters** to confine flows to the main river **channel** during low-flow periods. Many were built along the Upper Mississippi for the 4½-foot channel.

Code 710 Program - A Federal program that allows minimal public use developments at Federal projects

for health and safety (usually in lieu of extensive developments cost-shared by a local and the Federal Government).

commercial concessionaire - A commercial, licensed to provide prescribed services for on Federal lands. This type of license is a **private-use license**.

community - In the biological sense, all of the plants and animals in an area; a complex association containing both animals and plants.

community docks - Privately-owned public utilities on Federal land that are in **limited development areas**. Such facilities are operated by a group or a community to provide boat access from Federal lands. Details on community docks may be found in the **operational management plan** (to be developed later).

Cooperative Agreement (February 14, 1964) - An agreement between the Department of the Army and the Department of the Interior, Bureau of Sport and Wildlife (now FWS), that makes certain lands available for conservation and wildlife management. See also **General Plan Agreement**.

cost-share - In the context of this report, the sharing of construction costs for recreational facilities between a local government and the Federal Government.

critical habitat - The environment necessary for the continued existence of a certain species, usually in reference to **endangered species**.

cultural resources - A generic term used to describe archeological, historic, and architectural resources that have significance in terms of historic preservation.

demand - A recreation planning concept that is an estimate of the total possible participation in recreational activity (derived from carrying capacity patterns), usually expressed in activity occasions.

DNR - Department of Natural Resources.

District Engineer - The head of an Army Corps of Engineers District. In the context of this report, District Engineer refers to the military command chief administrator of the St. Paul District.



safety (usually in lieu of more payments cost-shared by a local sponsor Government).

cessionaire - A commercial interest provide prescribed services for the public. This type of license is not a use.

the biological sense, all of the plants in area; a complex **association** usually animals and plants.

land - Privately-owned public use facilities are operated by a group and/or provide boat access from Federal shore-rails on community docks may be found **management plan** (to be published

Agreement (February 14, 1963) - An on the Department of the Army and the Interior, Bureau of Sport Fisheries (W FWS), that makes certain Corps lands conservation and wildlife management. **Plan Agreement.**

the context of this report, division costs for recreational facilities government and the Federal Government.

t - The environment necessary to the of a certain species, usually used **endangered species.**

ces - A generic term used to refer to historic, and architectural resources icance in terms of historic preserva-

creation planning concept that is an e total possible participation in a ctivity (derived from current use y expressed in activity occasions.

of Natural Resources.

leader - The head of an Army Corps of ict. In the context of this study, r refers to the military commander and tor of the St. Paul District.

DO - Dissolved oxygen. A measurement of the amount of free oxygen available in water.

draft - The water depth that a vessel displaces.

drawdown - Lowering the water level of a reservoir or pool by releasing water impounded behind a dam.

dredged material disposal islands - (1) Islands formed by deposits of dredged material (spoil), usually composed of sand; (2) naturally-formed islands used for historic placement of dredged material or under consideration for future disposal; (3) shoreline areas where material has been or will be deposited. Such "islands" often offer various recreational opportunities.

endangered and threatened species - Endangered species are in danger of extinction; threatened species are declining in population and may become endangered. The U.S. Department of Interior and individual States have prepared lists of such species and have granted special legal protection to many of these plants and animals.

EA - Environmental assessment. An analysis of the environmental impacts of a proposed program or project, usually a minor action (see EIS below) with no significant environmental impacts, which does not require an EIS.

EIS - Environmental impact statement. A document that analyzes the impacts of a proposed program or project on the natural, social, economic, and cultural environment. NEPA requires an EIS for all major Federal actions with significant impacts upon the human environment.

ER - Engineer Regulation. Regulations issued by the Office of the Chief of Engineers in Washington for the entire Corps of Engineers.

fecal coliforms - Any of several bacilli found in human and animal intestines; the presence of these in water indicates fecal pollution (e.g., from sewage, barnyard, or pasture runoff).

fiscal year - The Federal budgetary year; the 12-month period for which the Federal Government plans its budget. Formerly July 1 to June 30, the Federal fiscal year is now October 1 to September 30.

GLOSSARY

floodplain - The portion of a river valley covered during high-water (flood) periods; ordinarily populated (unless it has been developed) by organisms not greatly harmed by short inundations.

General Plan Agreement(s) - Agreements for Federal management of 9-foot channel project lands, which involve the Departments of the Interior and the Army plus the appropriate State agencies. A separate agreement was signed for each State along the Upper Mississippi. The General Plan Agreements include maps that demarcate lands to be managed by each Federal agency, including those co-op lands referenced in the 1963 Cooperative Agreement between the Corps of Engineers and the FWS.

GREAT/GREAT I - The Great River Environmental Action Team was an interagency team under the leadership of the Fish and Wildlife Service and the Corps of Engineers, organized to identify and assess the problems associated with multi-purpose use of the Upper Mississippi River system and to develop recommendations for improved management. The GREAT I study covered the St. Paul District, Corps of Engineers, portion of the river.

head of navigation - The uppermost point in a waterway to which navigation ordinarily extends. On the Upper Mississippi, the head of navigation is in Minneapolis, Minnesota (river mile 857.6).

land use allocation plan - A plan that presents specific recommendations for the interim and ultimate uses to which all land and adjacent water areas will be dedicated, limits on the densities and locations of development and use, desired relationship of developments to natural and/or scenic protection zones, and a balanced integration of appropriate uses of all project resources in the public interest.

LAWCON - Land and Water Conservation Fund Act of 1965 (Public Law 88-578). This act provides funds for planning agencies to meet recreation needs.

lease - A written document that transfers certain rights of use and occupancy of land and/or structures from the owner to another person or entity for a specified period of time in return for a specified rent payment.

Level B studies - Cooperative efforts be that lead to policy documents. Such st critical water and related land resource require solutions within 15 to 25 years.

license - A written document that provi permission granted and the associated responsibilities, and liabilities imp license holder for specified use(s) of Also see **private-use license** and **permits/license**.

limited development area - A designate administered lands where **community dock** facilities may be permitted.

lockage - The movement of watercraft fro pool to another level through a **lock**. lockage refers to the movement of recreational watercraft through a lock.

lock/lock(s) and dam - On the **Upper Miss** Corps of Engineers lock and dam complex navigation. The dam holds back and r water to form a flat-water pool; the l raises or lowers river traffic from another and allows it to go past the obs by the dam.

LUAP - Land use allocation plan.

main channel border - The zone of the r the **9-foot navigation channel** and the m islands, or submerged definitions for th poundment) main river **channel**. Often cha very productive biologically, although li on this zone is available. Most rive (**riprap**, **wing dams**, and some closing da main channel border zone.

maintenance - Actions necessary to keep operating condition. On the **Upper I** **dredging** is the primary Corps of Enginee activity.

massasauga - A brown and white, ve rattlesnake.

master plan - A report that describes all project lands, waters, forests



Cooperative efforts between agencies by documents. Such studies focus on related land resource problems that within 15 to 25 years.

en document that provides evidence of ed and the associated obligations, and liabilities imposed upon the r specified use(s) of the property. e-use license and special-use

ent area - A designated area of Corps where **community dock** privileges or permitted.

ement of watercraft from one level or vel through a **lock**. A recreational to the movement of one or more craft through a lock.

m - On the **Upper Mississippi River**, lock and dam complexes facilitate dam holds back and regulates the at-water pool; the lock (or locks) river traffic from one level to it to go past the obstacle created

ocation plan.

er - The zone of the river between **ion channel** and the main riverbank, ged definitions for the old (preim- ver **channel**). Often characterized as ologically, although little research available. Most river structures s, and some closing dams) are in the r zone.

tions necessary to keep a project in ion. On the **Upper Mississippi**, imary Corps of Engineers maintenance

brown and white, venomous swamp

report that describes in detail how ds, waters, forests, and other

resources will be conserved, enhanced, developed, managed, and used in the public interest throughout the life of the project.

Memorandum of Agreement (April 18, 1963) - An agree- ment between the Corps and the U.S. Coast Guard clarifying jurisdiction and responsibilities to regulate certain activities in navigable waters.

Memorandum of Understanding (October 17, 1980) - This memorandum documents the joint decision of the Fish and Wildlife Service and the Corps to place a moratorium on granting **special-use permits** and licenses for new private recreational structures or associated actions within the **Upper Mississippi National Wildlife and Fish Refuge**.

mile - River mile.

mounds (conical, linear, effigy) - An elevation of earth constructed to contain or be placed over a grave. Burial mounds along the Mississippi River date to the Woodland Period (1000 BC - AD 1600). The later effigy mounds were constructed in the shapes of animals and humans.

National Register of Historic Places - A listing of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, and culture. This list is maintained by the National Park Service under authority of the National Historic Preservation Act of 1966.

natural area - An area officially recognized for its unique geologic, scenic, scientific, or natural features. An area in a condition as nearly natural as possible, which exemplifies typical or unique vegetation and associated biotic, geologic, and aquatic features. Such areas are maintained in the natural condition by allowing physical and biological processes to operate, usually without direct human intervention.

natural landmark - An officially recognized significant and/or unique physical and/or biological unit (e.g., an area, rock formation, forest) that illustrates or interprets the natural heritage of our Nation.

GLOSSARY

need - A recreation planning term used to express the result of comparing **demand** to **supply**. Generally, need is expressed in terms of facilities required to accommodate the total possible participation, minus the existing supply, hence the equation, "demand minus supply equals need." Need can also be derived by using accepted standards such as a certain number of tennis courts for a given level of population.

nine-foot navigation channel - The widened and deepened channel of the Upper Mississippi River created and maintained by the Corps of Engineers to a 9-foot depth, usually with several extra feet of overdepth dredging for economy. The **lock and dam** system and **maintenance dredging** are integral parts of this project.

normal flat pool - The flatwater area formed under normal flow conditions at normal operating water levels.

North Central Division - The Corps of Engineers Division, based in Chicago, that coordinates and oversees the work of the **St. Paul** (see below), **Rock Island**, **Detroit**, **Buffalo**, and **Chicago Districts**.

operational management plan - A detailed plan for operations of Federal lands (printed separately from the master plan). This plan contains information on shoreline/lakeshore management, fish and wildlife management, fire protection, safety, forest management, and park management.

PCB - Polychlorinated biphenyls. A toxic, highly dangerous substance formerly used widely as a transformer fluid and similar uses because of its extreme resistance to decomposition.

plan of development - The guidelines to be followed when providing the facilities called for in a **master plan**. Part III of this master plan will be the plan of development.

pool - The flat-water area impounded by a dam to facilitate navigation. On the Upper Mississippi, each pool takes its number or name from the **lock and dam** that forms it (i.e., pool 1 is impounded behind locks and dam 1).

primitive camping - Informal tent (or other) camping that does not use developed facilities. Primitive camping activity is encouraged on lands in low-density recreation areas and is not restricted on lands allocated as wildlife management areas.

public law - An Act of Congress that is applicable throughout the United States. (e.g., Public Law 91-190) refers to the Act of Congress (91st Session) and the specific number (190) passed during that session.

public use - The use of an area by the general public, such as occurs in parks. The opposite is **exclusive use**, which restricts use of an area to certain persons.

recreation day - A unit for measuring use. Because people often engage in more than one recreational activity during a park visit, the total number of activity occasions generated is divided by the number of different activities engaged in to give recreation days. The number of recreation days is closer to the actual number of people visiting an area than is the number of activity occasions.

refuge - An area established as a wildlife sanctuary, usually administered by the **FWS** (Federal Wildlife Service) agency.

river mile - Upper Mississippi River mile is the distance (following the main river channel) from the mouth of the Ohio River. Miles of river tributaries refer to the distance from the confluence with the Mississippi.

RM - River mile

RRMS - Recreation Resource Monitoring System designed to collect and analyze information on recreation facilities and recreation resource information for each Corps project with an annual visitation of 5,000 recreation days or more.

private-exclusive use - Also referred to as **private special use**, or **special use**. An area by a limited group rather than the general public.



amping - Informal tent (or tentless) does not use developed facilities. Such activity is encouraged on lands allocated as recreation areas and is not restricted on lands as wildlife management areas.

An Act of Congress that creates a law throughout the United States. The number (Law 91-190) refers to the session of Congress (1st Session) and the specific act (number 190) of that session.

Public use - The use of an area by the general public, as in parks. The opposite is **private** - which restricts use of an area to a few people.

Recreation unit - A unit for measuring use of an area. People often engage in more than one recreation activity during a park visit, the number of recreation units generated is divided by the average number of recreation activities engaged in to yield recreation units. The number of recreation days is the actual number of people visiting the area divided by the number of activity occasions.

Refuge - An area established as a wildlife and/or fish refuge, usually administered by the FWS or a State.

Upper Mississippi River miles refer to miles (above the main river channel) above the Ohio River. Miles of Mississippi River miles refer to the distance above the mouth of the Mississippi.

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Recreation Resource Monitoring System. A system used to collect and analyze annual recreation data for recreation resource management for each Corps project with an annual 1000 recreation days or more.

Private use - Also referred to as private recreation use, or special use. The use of an area by a limited group rather than the general public.

St. Paul District - The Corps of Engineers District which includes the **Upper Mississippi River** down to lock and dam 10, near Guttenberg, Iowa. It includes parts of Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota; and it has regulatory (permit-issuing) authority for all of Minnesota and Wisconsin. This District is part of the **North Central Division**.

scientific area - An area formally designated for preservation, legal protection, and management for the values inherent in its natural or undisturbed condition because its features offer unique opportunities for scientific study; such areas are generally not intended for a broad range of recreational use but rather for scientific study and educational uses.

shoreline management plan - Also known as the lakeshore management plan, this document will be a detailed appendix to the **master plan**. This appendix will be part of the **operational management plan**. This appendix will identify limited development areas and provide details of how private uses of Federal lands will be administered.

slip - A docking place for a boat, particularly one near a pier or dock.

special-use permits (Department of the Interior) and/or **special-use license** (Department of the Army - Authorization of a structure/structures or specified act/acts on Government land, with no property rights in real estate or any other exclusive privileges.

supply - An actual count of the recreation facilities and/or recreation areas available to the public. Usually expressed in an actual count, such as the number of launching ramps, or in the number of **activity occasions** of demand that it can satisfy. For example, assuming a group size of four persons and two groups using a table during a day, a picnic table would supply eight activity occasions daily.

suspended solids - Solid (particulate material) held in suspension in water, usually caused by turbulence or a disturbance such as dredging; capable of settling out when the cause ceases. Also see turbidity.

GLOSSARY

Title 36 authority - Synonymous with Title 36 regulations. The rules and regulations governing public use of water resource development projects administered by the Corps of Engineers.

turbidity - A condition of water resulting from suspended matter and affecting its ability to allow light to pass through. Water is turbid when its load of suspended material is conspicuous, causing a muddy or cloudy appearance. Also see **suspended solids**.

UMR - Upper Mississippi River.

UMRBC - Upper Mississippi River Basin Commission.

Upper Mississippi River - The portion of the Mississippi above the mouth of the Ohio River.

Upper Mississippi National Wildlife and Fish Refuge - This refuge comprises over 195,000 acres managed by the FWS for the conservation, maintenance, and management of wildlife resources and fish within and adjacent to the navigation pools of the Upper Mississippi.

user - Anyone who engages in a recreational activity.

visitation - The total use of an area. For example, an increase in visitation means that total use of the area has increased.

visually sensitive - The sensitivity of a resource to accommodate visual changes. A highly visually-sensitive resource is one in which relatively small changes in management practices or visual intrusions can have significant effects. Conversely, a resource with a low visual sensitivity can accommodate a number of small changes or a large change before there are any significant visual effects.

water-contact activities and sports - Activities in which people are likely to contact water: e.g., swimming, wading, waterskiing. This category excludes activities where water contact is unintentional, accidental, or uncommon: e.g., boating, fishing. Sometimes called body-contact sports.

Wild and Scenic Rivers - River (rivers) that can be characterized within an undeveloped/unintruded area containing outstanding natural amenities. Such rivers may be proclaimed as Wild and Scenic Rivers by inclusion in the National Wild and Scenic Rivers System (established by Public Law 90-542). Some State and Scenic River designations also exist.

wing dam - Low rock and brush structures extending out from shore at varying distances to constrict flow in the main channel.



Rivers - Rivers (or portions of
be characterized as free-flowing,
veloped/unintruded corridor, and
anding natural and/or cultural
rivers may be protected for future
nclusion in the National Wild and
em (established by Public Law 88-29
-542). Some States also have Wild
designations that protect certain

y rock and brush (often willow)
ng out from shore into the river for
to constrict low water flows to the

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